TRANE

Split System Heat Pumps

Split System Heat Pumps
7½ - 20 Tons - 60 Hz

Air Handlers
5-20 Tons - 60 Hz

February 2008 **SSP-PRC001-EN**

Introduction

Split System Heat Pump Units Designed With Your Needs In Mind.

The Trane reputation for quality and reliability in air conditioning is apparent with Odyssey™ light commercial split systems. These Trane systems are designed to meet your job requirements every time...and at a competitive price.

Odyssey has Trane quality and reliability built-in. Couple that with outstanding efficiency, flexibility and installation ease, and you have an unbeatable combination for years of worry-free service and operation.

Manufacturing Control

Trane's exclusive control over the design and manufacturing of all major components is unique in the industry. This approach assures total control over both the quality and reliability of these components and allows us to custom match components to deliver the best in split system performance.

Designing the Details

Careful attention was given to designing the details — from control wiring to the access panels. Odyssey units feature time-saving colored and numbered wiring and removable panels which allow complete access to all major components and controls. All outdoor units feature external high and low pressure switches for easy diagnosing and servicing of the unit. Service valves with gauge ports are provided on all units.

Standardized Cabinets

In addition, all cabinets have been standardized. When you are servicing an outdoor unit or an air handler, all components are in the same location from unit to unit.

Filters

The 5, 7½ and 10 ton air handlers are supplied with 1" throwaway filters as standard. The filter racks were designed to easily convert for installation of 2" filters. The 15 and 20 ton air handlers have 2" filters as standard.

Figure 1.

Contents

Introduction 2
Features and Benefits 4
Application Considerations 6
Selection Procedure 8
Model Number Description 9
General Data 10
Performance Data 12
Controls 31
Electrical Data 32
Jobsite Connections 36
Typical Wiring 37
Dimensional Data 42
Weights 58
Mechanical Specifications 60

Features and Benefits

Condensing Units Options

The 7½ and 10-ton single compressor models feature single refrigeration circuitry, lowering job installation costs by requiring only one set of refrigerant lines. These units are ideal for low cost, new construction, building renovation and unit replacement jobs.

In addition, Odyssey includes 15 and 20-ton dual compressor units to give true stand-by protection; if one compressor fails, the second will automatically start-up. Also, the first compressor can be serviced without shutting down the unit since the refrigerant circuits are independent.

Dual compressors also provide high energy savings. Most buildings are designed for peak load requirements even though the building typically operates at less than peak load. During light load conditions only one compressor functions to maintain the space comfort, reducing energy use. For instance, the EER of the 15 ton unit at ARI conditions is 10.1 and at part load conditions it is 11.6.

Trane split systems have been specified in thousands of applications. You'll find Odyssey will win you even more jobs with its compact, manageable cabinet which will save time and money for rigging and installation and permit Trane to replace almost any unit — effortlessly.

Each heat pump unit can operate to 50°F as standard in the cooling mode. An accessory Head Pressure Control gives you the capability to operate to 0°F. All heat pumps offer these accessories:

- Head Pressure Control
- Coil Guard Kits
- Isolators - both Rubber-in-Shear and Spring Type
- Anti-Short-Cycle Kit
- Time Delay Relay

Air Handlers Offer More Flexibility

Flexibility is a key to meeting changing market requirements. Odyssey split systems offer not only heat pumps, but also convertible air handlers.

The air handlers can be installed either vertically in a mechanical room or horizontally above a ceiling — and it doesn't require any removal of panels to make either airflow application work.

These air handlers have a double sloped condensate drain pan that allows for either airflow configuration. The drain pan can easily be removed for cleaning.

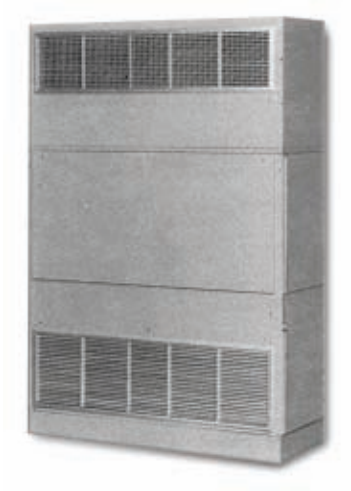
All the air handlers feature factory-installed belt drive and ball bearing evaporator fans with adjustable sheaves for maximum airflow performance. In fact, the standard motor on the 10-ton air handler will deliver 4000 cfm at 1.4" ESP. Plus oversized motors are available for higher static applications.

Figure 2.

Odyssey's air handler versatility is further increased by a complete line of accessories designed to match and install smoothly:

- Discharge Plenum and Grille
- Return Grille
- Subbase
- Electric Heaters
- High Static Evaporator Motor
- Isolators both Rubber-in-Shear and Spring Type
- A full line of Thermostats
- Outdoor Thermostat

Figure 3.



Odyssey — A Complete Split System

Odyssey delivers the flexibility to select a complete system that meets your particular job requirements. Air handlers are designed, tested and rated with outdoor units to let you select the proper match between capacity and load. Also, these matched systems can be quickly engineered for specific applications using Trane's computerized selection and load programs.

Odyssey Lowers Installation Costs

Your installation costs are reduced with Odyssey Split. Both outdoor units and air handlers are factory packaged and assembled so jobsite installation is quick and easy. You get a complete system, with all the components, controls and the internal wiring, factory-installed for a smooth jobsite start-up.

Unlike some competitive models the following components are factory-installed in Trane air handlers:

- Single Point Power Entry
- Blower Wheel and Housing
- Evaporator Motor with Sheaves and Pulleys
- Low Voltage Terminal Board
- Transformer
- Contactor
- Fan Relay
- DX Coil with complete Refrigeration Circuitry
- Expansion Valve and Check Valves

There's no need to install components and put together the air handler on the job. This provides you with less labor cost and fewer chances for installation errors which cause callbacks. All this means saving you money both in replacement and new construction applications.

Figure 4.

Application Considerations

Application of this product should be within the catalogued airflow and performance considerations.

Clearance Requirements

The recommended clearances identified with unit dimensions should be maintained to assure adequate serviceability, maximum capacity and peak operating efficiency. Actual clearances which appear inadequate should be reviewed with a local Trane Representative.

180° Blower Rotation

The 5, 7½ and 10 ton air handler blower section can be rotated 180° to change the discharge pattern. This modification must be done in the field and requires an additional kit. See unit installer's guide.

Low Ambient Cooling

As manufactured, these units can operate to 50°F in the cooling mode of operation. An accessory head pressure control will allow operation to 0°F outdoor ambient. When using these units with control systems such as bypass changeover Variable Air Volume, make sure you consider the requirement for a head pressure control to allow low ambient cooling.

Figure 5. Typical Horizontal Air Handler Application

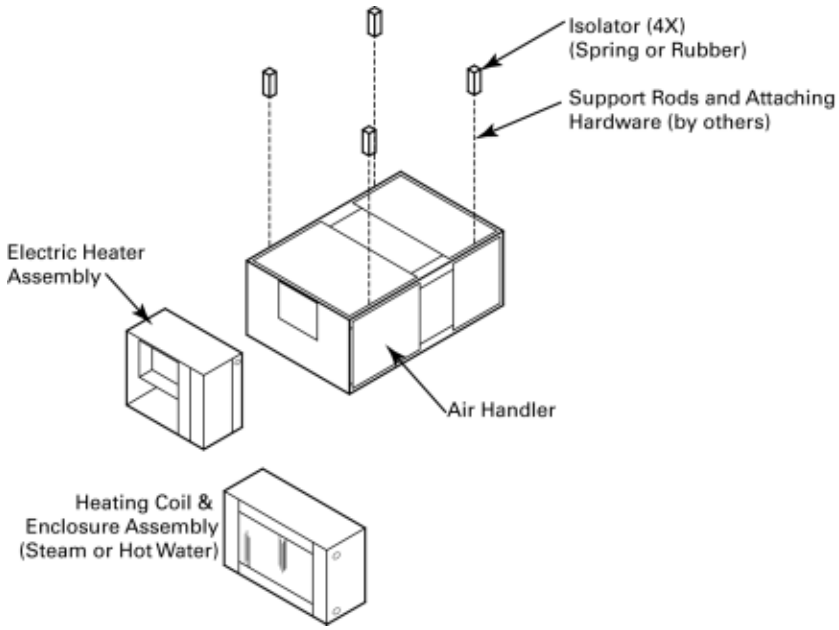


Figure 6. Typical Split System Application

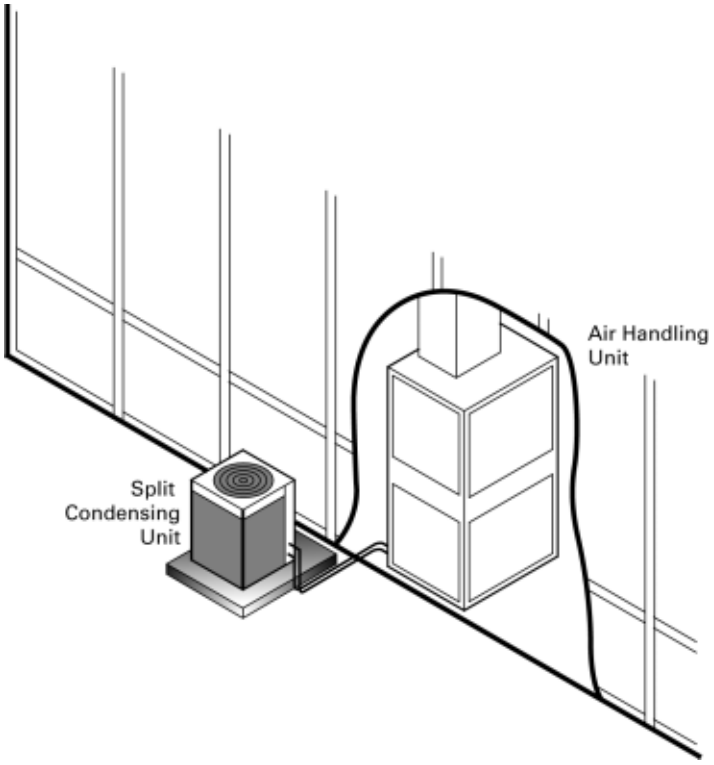
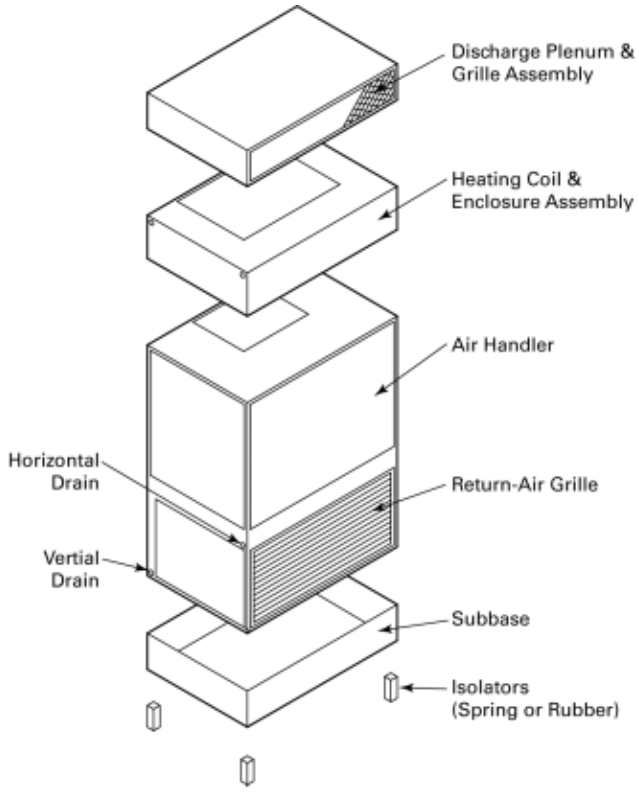


Figure 7. Typical Vertical Air Handler Application



Selection Procedure

Cooling Capacity

Step 1.

Calculate the building's total and sensible cooling loads at design conditions.

Step 2.

Size the equipment using Table 3. Match the cooling loads at design conditions.

Example: The following are the building cooling requirements:

a. Electrical Characteristics: 460/60/3
b. Summer Design Conditions: Entering Evaporator Coil: 80°F DB/67°F WB Outdoor Ambient: 95°F
Total Cooling Load: 90 MBh
c. Sensible Cooling Load: 64 MBh
d. Airflow: 3000 cfm
External Static Pressure: 0.77 inches of water gauge

Table 3 shows that TWA090A4 with TWE090A has a gross cooling capacity of 91.1 MBh and 65.9 MBh sensible capacity at 95°F DB ambient and 3000 cfm with 80°F DB/67°F WB air entering the evaporator.

To find the net cooling capacities, fan motor heat must be subtracted. Determine the total unit static pressure:

External Static Duct System	0.77 in.
Standard Filter 1 in.	0.10 in.
Supplementary Electric Heat	0.23 in.
Total Static Pressure	1.10 in.

Note: *The Evaporator Fan Performance Table has included the effect of a 1 in. filter already. Therefore, the actual Total Static Pressure is 1.10 - 0.10 = 1.00 in. With 3000 cfm and 1.00 in., Table 17 shows a 1.17 bhp.*

Note: *The formula below the table can be used to calculate Fan Motor Heat:*

3.5 X bhp = MBh

3.5 X 1.17 = 4.09 MBh

Net Total Cooling Capacity = 91.1 MBh - 4.09 = 87.01 MBh

Net Sensible Cooling Capacity = 65.9 MBh - 4.09 = 61.81 MBh

Heating Capacity

Step 1.

Calculate the building heating load using the Trane calculation form or any other standard accepted method.

Step 2.

Size the equipment using Table 11 to match the heating loads at design conditions. The following are building heating requirements:

a. Total Heating Load: 95.0 MBh
b. Outdoor Ambient (Winter): 17°F DB
c. Indoor Return Temperature: 70°F DB
d. Airflow: 3000 cfm

Table 11 indicates the mechanical heating portion of the heat pump will provide 54.8 MBh for the winter design conditions.

Step 3.

Because 54.8 MBh is less than the building's required heating capacity, a supplementary heater must be selected. 95.0 - 54.8 = 40.2 MBh minimum heater capacity.

From Table 32, the 14.96 kW heater has a capacity of 51,058 Btu/h.

From Table 37, the 14.96 kW heater at 460V indicates the heater model number is BAYHTRL415A.

This heater will be adequate to cover the residual heat capacity needed for the application.

Air Delivery Selection

External static pressure drop through the air distribution system has been calculated to be 0.77 in. of water gauge.

From Table 31 static pressure drop through the electric heater is 0.12 in. of water (0.77 + 0.12 = .89 in.)

Enter Table 17 for TWE090A4 at 3000 cfm and .90 static pressure. The standard motor at 790 RPM will give the desired airflow.

Model Number Description

Split System Heat Pump Model Nomenclature

T	W	A	0	9	0	A	3	0	0	A	A
1	2	3	4	5	6	7	8	9	10	11	12

Digits 1,2,3 - Product Type

TWA = Split System Heat Pump

Digits 4,5,6 - Nominal Gross Cooling Capacity (MBh)

090 = 7 1/2 Tons

120 = 10 Tons

180 = 15 Tons

240 = 20 Tons

Digits 7 - Major Development Sequence

A = Single Compressor

B = Dual Compressor

Digits 8 - Electrical Characteristics

1 = 208-230/60/1

3 = 208-230/60/3

4 = 460/60/3

W = 575/60/3

Digits 9,10 - Factory Installed Options

00 = Packed Stock

0S = Black Epoxy Coated Coil

Digits 11 - Minor Design Sequence

A = Current Design Sequence

Digits 12 - Service Digit

A = Current Service Digit

Air Handler Model Nomenclature

T	W	E	0	9	0	A	1	0	0	A	A
1	2	3	4	5	6	7	8	9	10	11	12

Digits 1,2,3 - Product Type

TWE = Split System Heat Pump/ Cooling Air Handler

Digits 4,5,6 - Nominal Gross Cooling Capacity (MBh)

060 = 5 Tons

090 = 7½ Tons

120 = 10 Tons

180 = 15 Tons

240 = 20 Tons

Digits 7 - Refrigerant Circuit

A = Single

B = Dual

Digits 8 - Electrical Characteristics

1 = 208-230/60/1

3 = 208-230/60/3

4 = 460/60/3

W = 575/60/3

Digits 9,10 - Factory Installed Options

00 = Packed Stock

Digits 11 - Minor Design Sequence

A = Current Design Sequence

Digits 12 - Service Digit

A = Current Service Digit

General Data

Table 1. General Data — Heat Pumps

	7½ Tons	10 Tons	15 Tons	20 Tons
	Single Compressor TWA090A3,A4,AW	**Single Compressor TWA120A3,A4,AW**	**Dual Compressor TWA180B3,B4,BW**	**Dual Compressor TWA240B3,B4,BW**
Cooling Performance[i]				
Gross Cooling Capacity				
Matched Air Handler	91,000	124,000	182,000	240,000
Matched Heat Pump Only[ii]	91,000	124,000	182,000	240,000
ARI Net Cooling Capacity[iii]	89,000	120,000	176,000	234,000
EER[iv]				
Matched Air Handler	10.1	10.1	9.9	9.3
Heat Pump Only	11.5	11.1	10.9	10.3
Integrated Part Load Value[v]	-	-	11.0	10.5
System/Condensing Unit Power (kW)	8.70/7.95	11.91/11.07	17.77/16.62	24.99/23.20
Heating Performance				
ARI Heating and Matched Air Handler				
High Temperature Capacity	87,000	122,000	168,000	234,000
System kW/COP	7.68/3.3	10.82/3.2	16.10/3.1	22.42/3.1
Low Temperature Capacity	55,000	80,000	106,000	154,000
System kW/COP	6.73/2.4	9.62/2.4	14.16/2.2	19.54/2.30
Compressor				
No./Type	1/Trane 3-D™ Scroll	1/Trane 3-D™ Scroll	2/Trane 3-D™ Scroll	2/Trane 3-D™ Scroll
No. Motors/HP	1/7.5	1/10	2/7.5	2/10
Motor RPM	3450	3450	3450	3450
Sound Rating (BELS)[vi]	8.8	8.8	8.8	8.8
System Data[vii]				
No. Refrigerant Circuits	1	1	2	2
Suction Line (in.) OD	1 3/8	1 3/8	1 3/8	1 3/8
Liquid Line (in.) OD	1/2	1/2	1/2	1/2
Outdoor Coil - Type	Plate Fin	Plate Fin	Plate Fin	Plate Fin
Tube Size (in.) OD	.375	.375	.375	.375
Face Area (sq ft)	19.2	29.5	38.5	50.2
Rows/FPI	2/18	2/18	2/18	2/18
Refrigerant Control	Expansion Valve	Expansion Valve	Expansion Valve	Expansion Valve
Outdoor Fan - Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter (in.)	1/26	1/28	2/26	2/28
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct1
CFM	5890	8200	11,780	16,240
No. Motor/HP	1/.50	1/1.00	2/.50	2/1.00
Motor RPM	1100	1100	1100	1100
Refrigerant Charge (Field Supplied)				
(lbs of R-22)[viii]	18.00	31.50	36.00	48.50

(i) Cooling Performance is rated at 95°F ambient, 80°F entering dry bulb, 67°F entering wet bulb. Gross capacity does not include the effect of fan motor heat. ARI capacity is net and includes the effect of fan motor heat. Certified in accordance with the Unitary Large Equipment certification program, which is based on ARI Standard 340/360-00.

(ii) Condensing unit only gross cooling capacity rated at 45°F saturated suction temperature and at 95°F ambient.

(iii) ARI net cooling capacity is calculated with matched blower coil and 25 feet of 1 3/8" or 1/2" OD interconnecting tubing.

(iv) EER is rated at ARI conditions and in accordance with DOE test procedures.

(v) Integrated part load value is based on ARI Standard 340/360-00. Units are rated at 80°F ambient, 80°F entering dry bulb (DB), and 67°F entering wet bulb (WB) at ARI rated cfm.

(vi) Sound rating shown is tested in accordance with ARI Standard 270 or 370.

(vii) Refer to refrigerant piping applications manual for line sizing and line length.

(viii) Refrigerant (operating) charge is for condensing unit (all circuits) with matching blower coils and 25 feet of interconnecting refrigerant lines. All units are supplied with a small nitrogen holding charge only.

General Data

Table 2. General Data - Air Handlers

	5 Tons		7½ Tons		10 Tons	
	Single Circuit TWE060A1[i], A3, A4, AW	**Dual Circuit TWE060B1, B3, B4**	**Single Circuit TWE090A1, A3[ii], AW**	**Dual Circuit TWE090B1, B3[ii]**	**Single Circuit TWE120A1[iii]**	**Single Circuit TWE120A3[ii], AW**
System Data						
No. Refrigerant Circuits	1	2	1	2	1	1
Suction Line (in.) OD	1 1/8	3/4	1 3/8	1 1/8	1 3/8	1 3/8
Liquid Line (in.) OD	3/8	5/16	1/2	3/8	1/2	1/2
Indoor Coil - Type	Plate Fin	Plate Fin	Plate Fin	Plate Fin	Plate Fin	Plate Fin
Tube Size (in.)	.375	.375	.375	.375	.375	.375
Face Area (sq. ft.)	5.0	5.0	8.1	8.1	11.2	11.2
Rows/FPI	3/12	3/12	3/12	3/12	4/12	4/12
Refrigerant Control	Expansion Valve	Expansion Valve	Expansion Valve	Expansion Valve	Expansion Valve	Expansion Valve
Drain Connection Size (in.)	1 PVC	1 PVC	1 PVC	1 PVC	1 PVC	1 PVC
Indoor Fan - Type	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
No. Used/Diameter x Width (in.)	1/12 x 12	1/12 x 12	1/15 x 15	1/15 x 15	1/15 x 15	1/15 x 15
Drive Type/No. Speeds	Belt/Adjustable	Belt/Adjustable	Belt/Adjustable	Belt/Adjustable	Belt/Adjustable	Belt/Adjustable
CFM	2000	2000	3000	3000	4000	4000
No. Motors	1	1	1	1	1	1
Motor HP - Standard/Oversized	.75/1.00	.75/1.00	1.50/2.00	1.50/2.00	2.00	2.00/3.00
Motor RPM	1725	1725	1725	1725	1725	1725
Motor Frame Size	56	56	56H	56H	56HZ	56HZ
Filters - Type/Furnished	Throwaway/Yes	Throwaway/Yes	Throwaway/Yes	Throwaway/Yes	Throwaway/Yes	Throwaway/Yes
(No.)/Size Recommended	(1) 16x20x1 (1) 20x20x1	(1) 16x20x1 (1) 20x20x1	(3) 16x25x1	(3) 16x25x1	(4) 16x25x1	(4) 16x25x1

	10 Tons			15 Tons	20 Tons
	Dual Circuit TWE120B1[iv]	**Dual Circuit TWE120B3[ii], B4, BW**	**Dual Circuit TXE120B500B**	**Dual Circuit TWE180B3, B4, BW**	**Dual Circuit TWE240B3, B4, BW, E3, E4, EW**
System Data					
No. Refrigerant Circuits	2	2	2	2	2
Suction Line (in.) OD	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8
Liquid Line (in.) OD	3/8	3/8	3/8	1/2	1/2
Indoor Coil - Type	Plate Fin	Plate Fin	Plate Fin	Plate Fin	Plate Fin
Tube Size (in.)	.375	.375	.375	.375	.375
Face Area (sq. ft.)	11.2	11.2	11.2	16.3	21.6
Rows/FPI	4/12	4/12	4/12	3/12	3/12
Refrigerant Control	Expansion Valve	Expansion Valve	Expansion Valve	Expansion Valve	Expansion Valve
Drain Connection Size (in.)	1 PVC	1 PVC	1 PVC	1 PVC	1 PVC
Indoor Fan - Type	Centrifugal	Centrifugal	-	Centrifugal	Centrifugal
No. Used/Diameter x Width (in.)	1/15x15	1/15x15	-	2/15x15	2/15x15
Drive Type/No. Speeds	Belt/Adjustment	Belt/Adjustment	-	Belt/Adjustment	Belt/Adjustment
CFM	4000	4000	-	6000	8000
No. Motors	1	1	-	1	1
Motor HP - Standard/Oversized	2.00/-	2.00/3.00	-	3.00/5.00	5.00/7.50
Motor RPM	1725	1725	-	1735/1750	1750/3470
Motor Frame Size	56HZ	56HZ	-	145T	184T
Filters - Type/Furnished	Throwaway/Yes	Throwaway/Yes	Throwaway/Yes[v]	Throwaway/Yes	Throwaway/Yes
(No.)/Size Recommended	(4) 16x25x1	(4) 16x25x1	(4) 16x25x1	(8) 15x20x2	(4) 16x25x2 (4) 16x20x2

[i] TWE60A1 has motor RPM of 3450 for oversized motor.
[ii] Ships wired for 208-230/60/3. Field convertible to 460/60/3.
[iii] TWE120A1 does not have an oversized motor option.
[iv] TWE120B1 does not have an oversized motor option.
[v] Coil has filter rack as standard, but no filters. When using this coil as a duct coil, use below size recommended. Filters for coil not recommended when using coil with upflow gas furnaces.

Performance Data

Table 3. Gross Cooling Capacities (MBh) 7½ Tons TWA090A Heat Pump with 7½ TWE090A Air Handler

CFM Air flow	Ent DB °F	Ambient Temperature 85 Entering WB 61 MBH	61 SHC	67 MBH	67 SHC	73 MBH	73 SHC	95 61 MBH	61 SHC	67 MBH	67 SHC	73 MBH	73 SHC	105 61 MBH	61 SHC	67 MBH	67 SHC	73 MBH	73 SHC
2700	75	84.1	67.2	92.8	56.3	102.1	37.7	81.2	65.7	89.5	55.0	98.5	36.4	78.0	64.2	86.1	53.6	94.8	35.2
	80	84.6	78.6	93.0	64.5	102.1	49.6	81.8	77.2	89.8	63.2	98.5	48.3	78.8	75.7	86.3.	61.7	94.8	46.9
	85	86.9	86.9	93.1	75.8	102.2	61.3	84.4	84.4	89.9	74.4	98.7	60.0	81.7	81.7	86.4	72.9	95.0	58.6
	90	91.2	91.2	93.7	87.3	102.3	72.9	88.7	88.7	90.6	85.9	98.7	71.5	86.0	86.0	87.3	84.5	95.1	70.0
3000	75	87.5	70.3	94.4	54.8	103.7	38.4	82.7	68.8	91.1	53.4	100.0	37.1	79.4	67.2	87.5	51.9	96.1	35.7
	80	86.5	82.9	94.6	67.5	103.7	51.2	83.6	81.4	91.1	65.9	100.0	499	80.5	79.9	87.6	64.4	96.2	48.5
	85	89.6	89.6	94.7	79.7	103.8	64.0	87.1	87.1	91.4	78.3	100.2	62.6	84.3	84.3	87.9	76.7	96.4	61.3
	90	94.1	94.1	95.7	92.4	92.4	103.9	76.4	91.5	92.5	91.0	100.3	75.0	88.6	88.6	88.7	88.7	96.5	73.6
3300	75	87.0	73.3	95.7	56.6	104.9	39.0	83.9	71.7	92.3	55.2	101.2	37.6	80.6	70.1	88.6	53.7	97.3	36.2
	80	88.1	87.0	95.8	70.1	105.0	52.8	84.7	84.7	92.4	68.6	101.2	51.4	81.9	81.9	88.8	67.0	97.4	50.0
	85	92.0	92.0	96.1	83.4	105.1	66.5	89.3	89.3	92.8	82.0	101.4	65.2	86.4	86.4	89.2	80.4	97.6	63.8
	90	96.6	96.6	97.5	97.2	105.2	79.9	93.9	93.9	93.9	93.9	101.5	78.5	90.9	90.9	91.0	91.9	97.7	77.0
3600	75	88.2	76.1	96.8	58.3	106.0	39.5	85.0	74.6	93.3	56.9	102.2	38.1	81.6	73.0	89.6	55.4	98.2	36.7
	80	89.3	89.3	96.9	72.7	106.1	54.2	86.6	86.6	93.4	71.2	102.3	52.9	83.7	83.7	89.8	69.6	98.3	51.5
	85	94.1	94.1	97.4	87.0	106.2	69.0	91.3	91.3	94.0	85.6	102.5	67.6	88.3	88.3	90.4	84.0	98.4	66.1
	90	98.9	98.9	98.9	98.9	106.4	83.2	96.0	96.0	96.1	96.1	102.6	81.8	92.9	92.9	93.0	93.0	98.7	80.3

CFM Air flow	Ent DB °F	Ambient Temperature 115 Enter WB 61 MBH	61 SHC	67 MBH	67 SHC	73 MBH	73 SHC
2700	75	74.7	62.5	82.4	52.1	90.9	33.8
	80	75.6	74.1	82.6	60.0	91.0	45.5
	85	78.9	78.9	82.9	71.3	91.1	57.2
	90	83.1	83.1	84.0	83.0	91.3	68.5
3000	75	75.9	65.6	83.7	50.4	92.2	34.3
	80	77.0	77.0	83.9	62.8	92.3	47.1
	85	81.3	81.3	84.3	75.2	92.5	59.9
	90	85.6	85.6	85.7	85.7	92.6	72.1
3300	75	77.1	68.5	84.8	52.2	93.3	34.8
	80	78.9	78.9	85.0	65.4	93.4	48.6
	85	83.3	83.3	85.6	78.9	93.6	62.4
	90	87.8	87.8	87.9	87.9	93.7	75.5
3600	75	78.1	71.3	85.7	53.9	94.1	35.3
	80	80.6	80.6	85.9	68.0	94.3	50.1
	85	85.1	85.1	86.7	82.5	94.4	64.6
	90	89.7	89.7	89.8	89.8	94.8	78.8

Notes:
1. Dry coil condition. Total gross capacity (MBh) shown to the left is not applicable. In this case the Sensible Heat Capacity (SHC) is the total capacity.
2. All temperatures are in °F.
3. All capacities shown are gross and have not considered indoor fan heat.
4. To obtain net cooling capacities, subtract indoor fan heat.
5. MBH = Total Gross Cooling Capacity
6. SHC = Sensible Heat Capacity

Performance Data

10 Tons Gross Cooling Capacities

Table 4. Gross Cooling Capacities (MBh) 10 Ton TWA120A Heat Pump with 10 Ton TWE120A Air Handler

CFM Air flow	Ent DB °F	Ambient Temperature 85 Entering WB 61 MBH	61 SHC	67 MBH	67 SHC	73 MBH	73 SHC	95 61 MBH	61 SHC	67 MBH	67 SHC	73 MBH	73 SHC	105 61 MBH	61 SHC	67 MBH	67 SHC	73 MBH	73 SHC
3600	75	114.6	90.1	126.2	76.3	138.8	51.1	110.6	88.1	121.8	74.5	134.0	49.4	106.2	85.9	117.1	72.6	128.9	47.7
	80	115.0	104.8	126.4	85.8	138.8	66.4	111.1	102.8	122.0	83.9	134.0	64.6	106.9	100.7	117.3	81.9	128.9	62.6
	85	117.1	117.1	126.5	100.7	138.8	81.2	113.7	113.7	122.0	98.6	134.0	79.3	110.1	110.1	117.4	96.5	129.0	77.4
	90	122.7	122.7	126.9	115.2	138.9	95.9	119.2	119.2	122.7	113.2	134.2	94.0	115.5	115.5	118.2	111.1	129.1	92.1
4000	75	116.7	94.0	128.5	73.3	114.1	52.1	112.5	91.9	123.9	71.4	136.1	50.4	108.1	86.7	119.1	69.3	130.8	48.5
	80	117.5	110.2	128.6	89.5	141.1	68.5	113.4	108.1	124.0	87.6	136.1	66.6	109.2	106.0	119.2	85.5	130.8	64.6
	85	120.7	120.7	128.6	105.4	141.1	84.5	117.1	117.1	124.1	103.4	136.2	82.6	113.4	113.4	119.3	101.2	131.0	80.7
	90	126.6	126.6	129.5	121.4	141.2	100.5	122.9	122.9	125.2	119.4	136.3	98.6	119.1	119.1	120.7	117.3	131.1	96.6
4400	75	118.5	97.7	130.3	75.5	142.9	53.0	114.2	95.6	125.6	73.6	137.8	51.1	109.6	93.4	120.7	71.6	132.4	49.2
	80	119.7	115.3	130.4	93.0	142.9	70.4	115.6	113.2	125.8	91.0	137.8	68.5	11.3	111.1	120.8	89.0	132.5	66.5
	85	123.9	123.9	130.5	110.0	143.0	87.7	120.2	120.2	125.9	107.9	138.0	85.8	116.3	116.3	121.1	105.8	132.6	83.8
	90	129.9	129.9	131.9	127.4	143.1	104.8	126.1	126.1	127.5	125.4	138.1	102.9	122.2	122.2	122.0	122.0	132.7	100.9
4800	75	120.0	101.3	131.9	77.7	144.5	53.6	115.6	99.1	127.1	75.7	139.4	51.7	111.1	96.9	122.1	73.7	133.8	49.8
	80	121.7	120.2	132.0	96.3	144.5	72.2	116.7	116.7	127.2	94.4	139.3	70.3	112.8	112.8	122.2	92.3	133.9	68.3
	85	126.7	126.7	132.2	114.4	144.6	90.7	122.9	122.9	127.6	112.4	139.5	88.8	118.8	118.8	122.7	110.3	134.0	86.8
	90	132.9	132.9	134.1	133.2	144.7	109.0	129.0	129.0	128.9	128.9	138.5	106.9	124.9	124.9	124.8	124.8	134.1	104.8

CFM Air flow	Ent DB °F	Ambient Temperature 115 Enter WB 61 MBH	61 SHC	67 MBH	67 SHC	73 MBH	73 SHC
3600	75	101.7	83.6	112.2	70.6	123.4	45.8
	80	102.6	98.5	112.4	79.8	123.5	60.6
	85	106.3	106.3	112.5	94.3	123.6	75.3
	90	111.7	111.7	113.5	109.0	123.7	90.0
4000	75	103.5	87.5	114.0	67.2	125.2	46.5
	80	104.9	103.8	114.2	83.4	125.3	62.6
	85	109.5	109.5	114.4	99.0	125.4	78.6
	90	115.0	115.0	115.9	115.2	125.5	94.5
4400	75	105.0	91.1	115.5	69.4	126.7	47.1
	80	106.5	106.5	115.7	86.8	126.8	64.5
	85	112.2	112.2	116.1	103.6	126.9	81.7
	90	117.9	117.9	117.8	117.8	126.9	98.5
4800	75	106.3	94.7	116.7	71.5	128.0	47.7
	80	108.7	108.7	116.9	89.8	128.0	66.2
	85	114.6	114.6	117.6	108.0	128.2	84.7
	90	120.5	120.5	120.4	120.4	128.2	102.6

Notes:
1. Dry coil condition. Total gross capacity (MBh) shown to the left is not applicable. In this case the Sensible Heat Capacity (SHC) is the total capacity.
2. All temperatures are in °F.
3. All capacities shown are gross and have not considered indoor fan heat.
4. To obtain net cooling capacities, subtract indoor fan heat.
5. MBH = Total Gross Cooling Capacity
6. SHC = Sensible Heat Capacity

Table 5. Gross Cooling Capacities (MBh) 15 Tons TWA180B Heat Pump with 15 Tons TWE180B Air Handler

CFM Air flow	Ent DB °F	Ambient Temperature 85 Entering WB 61 MBH	61 SHC	67 MBH	67 SHC	73 MBH	73 SHC	95 61 MBH	61 SHC	67 MBH	67 SHC	73 MBH	73 SHC	105 61 MBH	61 SHC	67 MBH	67 SHC	73 MBH	73 SHC
5400	75	167.8	134.1	185.1	112.3	203.6	75.2	161.9	131.2	178.6	109.7	196.4	72.7	155.5	128	171.6	106.9	188.9	70.1
	80	168.7	157	185.4	128.9	203.7	99.1	163	154.1	178.9	126.2	196.5	96.4	156.9	151.1	171.8	122.9	189.1	93.7
	85	173.3	173.31	185.7	151.5	203.9	122.5	168.4	168.41	179.2	148.6	196.8	119.8	163	163.01	172.3	145.5	189.4	117.1
	90	182	182.01	186.8	174.4	204.1	145.5	176.9	176.91	180.6	171.6	197	142.7	171.4	171.41	174	168.7	189.6	139.8
6000	75	170.9	140.3	188.3	109.4	206.8	76.7	164.8	137.3	181.5	106.6	199.3	74.1	158.3	134.2	174.4	103.7	191.6	71.3
	80	172.3	165.5	188.4	134.5	206.8	102.3	166.5	162.6	181.7	131.6	199.5	99.7	160.3	159.5	174.7	128.5	191.8	96.9
	85	178.8	178.81	188.9	159.2	207.1	127.9	173.6	173.61	182.3	156.3	199.8	125.2	168	168.01	175.3	153.2	192.2	122.5
	90	187.9	187.91	190.7	184.5	207.3	152.7	182.5	182.51	184.4	181.7	200	149.9	176.8	176.81	176.9	176.91	192.5	146.9
6600	75	173.5	146.3	190.9	113	209.3	77.8	167.2	143.2	184	110.2	201.7	75.1	160.5	140	176.7	107.3	193.9	72.3
	80	175.6	173.7	191.1	139.9	209.4	105.4	169	169.01	184.3	137	201.9	102.7	163.3	163.31	177	133.8	194.1	100
	85	183.6	183.61	191.7	166.7	209.8	133	178.1	178.11	184.9	163.7	202.3	130.3	172.3	172.31	177.9	160.6	194.3	127.2
	90	192.9	192.91	194.3	194.31	210	159.6	187.3	187.31	187.5	187.51	202.6	156.7	181.4	181.41	181.6	181.61	194.9	153.8
7200	75	175.7	152	193.1	116.5	211.5	78.8	169.4	148.9	186.1	113.7	203.7	76	162.6	145.6	178.6	110.7	195.8	73.3
	80	178.2	178.21	193.4	145.1	211.6	108.4	172.7	172.71	186.4	142.1	204	105.7	166.9	166.91	179	139	196.1	102.9
	85	187.8	187.81	194.2	173.9	212	138	182.1	182.11	187.4	170.9	204.2	134.8	176.1	176.11	180.2	167.8	196.4	131.8
	90	197.4	197.41	197.5	197.51	212.3	166.3	191.6	191.61	191.7	191.71	204.7	163.4	185.4	185.41	185.6	185.61	196.9	160.4

CFM Air flow	Ent DB °F	Ambient Temperature 115 Enter WB 61 MBH	61 SHC	67 MBH	67 SHC	73 MBH	73 SHC
5400	75	148.8	124.7	164.3	104	181.1	67.5
	80	150.4	147.9	164.6	119.8	181.4	90.8
	85	157.3	157.31	165.1	142.4	181.8	114.3
	90	165.7	165.71	167.2	165.6	182	136.8
6000	75	151.3	130.8	166.9	100.7	183.7	68.5
	80	153.5	153.51	167.2	125.3	184	94.1
	85	162.1	162.11	168	150	184.4	119.7
	90	170.8	170.81	171	171.01	184.7	144
6600	75	153.5	136.6	169.1	104.2	185.8	69.5
	80	157.3	157.31	169.5	130.6	186.2	97.2
	85	166.2	166.21	170.5	157.5	186.4	124.2
	90	175.2	175.21	175.4	175.41	187	150.8
7200	75	155.5	142.2	170.9	107.7	187.6	70.4
	80	160.7	160.71	171.3	135.7	188	100.1
	85	169.8	169.81	172.8	164.6	188.4	128.8
	90	179.1	179.11	179.3	179.31	188.9	157.4

Notes:
1. Dry coil condition. Total gross capacity (MBh) shown to the left is not applicable. In this case the Sensible Heat Capacity (SHC) is the total capacity.
2. All temperatures are in °F.
3. All capacities shown are gross and have not considered indoor fan heat.
4. To obtain net cooling capacities, subtract indoor fan heat.
5. MBH = Total Gross Cooling Capacity
6. SHC = Sensible Heat Capacity

Performance Data

20 Tons Gross Cooling Capacities

Table 6. Gross Cooling Capacities (MBh) 20 Tons TWA240B Heat Pump with 20 Ton TWE240B Air Handler

CFM Air flow	Ent DB °F	Ambient Temperature 85 Entering WB 61 MBH	61 SHC	67 MBH	67 SHC	73 MBH	73 SHC	95 61 MBH	61 SHC	67 MBH	67 SHC	73 MBH	73 SHC	105 61 MBH	61 SHC	67 MBH	67 SHC	73 MBH	73 SHC
7200	75	223.8	177.3	246	148.8	269.9	99.5	215.5	173.1	237	145.1	260.1	96.1	206.9	168.8	227.5	141.3	249.8	92.5
	80	224.8	206.8	246.2	169	269.9	130	216.8	202.6	237.3	165.1	260.1	126.2	208.5	198.4	227.9	161	249.8	122.3
	85	229.6	229.61	246.4	198.1	270	159.6	222.6	222.61	237.5	194	260.3	155.8	215.3	215.31	228.1	189.7	250	151.9
	90	240.5	240.51	247.6	227.3	270.3	189	233.4	233.41	238.9	223.2	260.6	185.2	225.9	225.91	230	219.1	250.3	181.3
8000	75	227.8	185.1	250.2	143.9	274.2	101.4	219.3	180.8	240.9	139.9	264.1	98	210.4	176.4	231.1	135.9	253.4	94.1
	80	229.4	217.4	250.4	176.3	274.1	134	221.2	213.2	241.2	172.4	264.1	130.3	212.8	208.9	231.2	167.9	253.4	126.3
	85	236.4	236.41	250.6	207.6	274.3	166.2	229.3	229.31	241.4	203.5	264.3	162.4	221.6	221.61	231.9	199.2	253.7	158.5
	90	247.9	247.91	252.5	239.7	274.6	198.2	240.4	240.41	243.8	235.6	264.4	193.9	232.6	232.61	234.7	231.4	253.8	189.7
8800	75	231.2	192.5	253.6	148.3	277.7	103	222.4	188.2	244.1	144.4	267.4	99.3	213.4	183.7	234.1	140.3	256.4	95.3
	80	233.5	227.6	253.9	183.3	277.6	137.8	225.3	223.4	244.2	178.8	267.3	134.1	215.8	215.81	234.3	174.5	256.5	130.1
	85	242.5	242.51	254.2	216.8	277.9	172.5	235	235.01	244.9	212.7	267.6	168.7	227.1	227.11	235.2	208.4	256.8	164.7
	90	254.3	254.31	257	251.7	278	206.3	246.5	246.51	248.2	247.6	267.8	202.3	238.4	238.41	238.2	238.21	257	198.1
9600	75	234	199.6	256.5	152.6	280.7	104.3	225.2	195.2	246.8	148.6	270.1	100.5	216	190.8	236.7	144.5	258.9	96.5
	80	235.8	235.81	256.6	189.4	280.7	141.5	228.3	228.31	247	185.2	270.1	137.7	220.3	220.31	236.9	180.9	259	133.7
	85	247.9	247.91	257.4	225.8	280.9	178.6	240.1	240.11	248	221.6	270.5	174.7	231.9	231.91	238.2	217.2	259.4	170.7
	90	260	260.01	259.7	259.71	281.1	214.5	252	252.01	251.8	251.81	270.7	210.4	243.5	243.51	243.4	243.41	259.6	206.2

CFM Air flow	Ent DB °F	Ambient Temperature 115 Enter WB 61 MBH	61 SHC	67 MBH	67 SHC	73 MBH	73 SHC
7200	75	198	164.3	217.7	137.3	238.9	88.8
	80	199.9	194.1	218.1	156.9	238.9	118.3
	85	207.7	207.71	218.4	185.3	239.2	147.8
	90	218	218.01	220.7	214.8	239.3	176.7
8000	75	201.2	171.9	221	131.7	242.2	90
	80	203	203.01	221.2	163.5	242.3	122.3
	85	213.6	213.61	222	194.8	242.6	154.4
	90	224.3	224.31	224.1	224.11	242.8	185.4
8800	75	204	179.2	223.7	136.1	244.9	91.2
	80	207.8	207.81	224	170.1	245	126
	85	218.8	218.81	225.1	204	245.4	160.6
	90	229.8	229.81	229.6	229.61	245.6	193.7
9600	75	206.6	186.2	226.1	140.3	247.2	92.4
	80	212	212.01	226.4	176.4	247.3	129.6
	85	223.3	223.31	228	212.8	247.7	166.6
	90	234.6	234.61	234.5	234.51	248	201.7

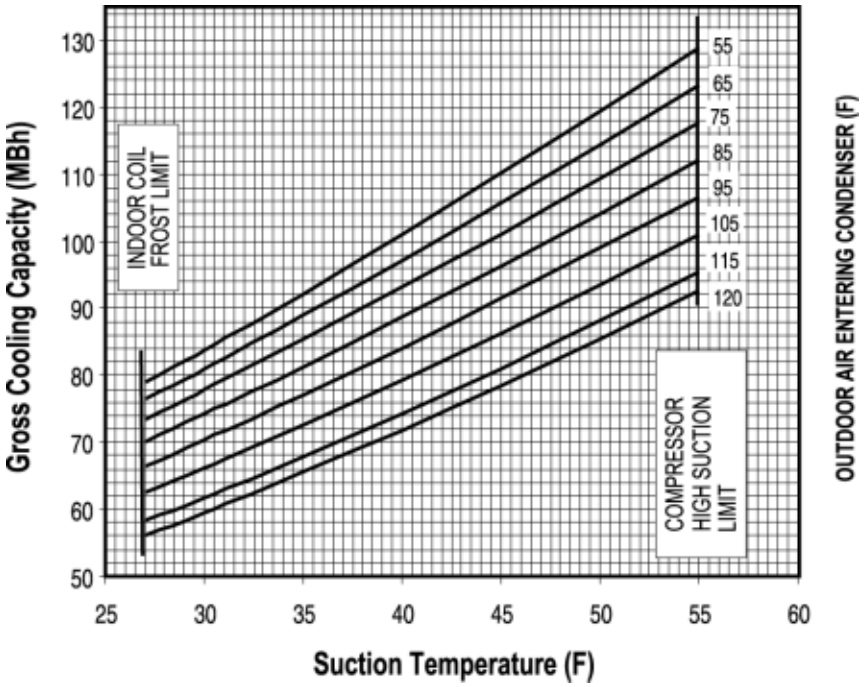
Notes:
1. Dry coil condition. Total gross capacity (MBh) shown to the left is not applicable. In this case the Sensible Heat Capacity (SHC) is the total capacity.
2. All temperatures are in °F.
3. All capacities shown are gross and have not considered indoor fan heat.
4. To obtain net cooling capacities, subtract indoor fan heat.
5. MBH = Total Gross Cooling Capacity
6. SHC = Sensible Heat Capacity

Table 7. Gross Cooling Capacities (MBh) 7½ Tons TWA090A Heat Pump Only

Outdoor Temp (°F)		Suction Temperature (°F)					
		30	35	40	45	50	55
65	Head press PSIG	168	173	179	185	191	197
	Cap. Btuh/1000	81	89	97.2	105.8	114.5	123.4
	Unit kW	5.56	5.69	5.83	5.97	6.13	6.28
75	Head press PSIG	194	199	205	211	217	224
	Cap. Btuh/1000	77.8	85.3	93.1	101.1	109.4	117.8
	Unit kW	6.09	6.23	6.38	6.54	6.7	6.87
85	Head press PSIG	221	227	234	240	247	254
	Cap. Btuh/1000	74.1	81.3	88.7	96.3	104.2	112.3
	Unit kW	6.71	6.87	7.03	7.2	7.38	7.56
95	Head press PSIG	252	258	265	272	279	286
	Cap. Btuh/1000	70.3	77.1	84.1	91.4	98.9	106.7
	Unit kW	7.43	7.6	7.77	7.95	8.14	8.33
105	Head press PSIG	285	292	299	306	314	322
	Cap. Btuh/1000	66.1	72.6	79.3	86.3	93.5	101.1
	Unit kW	8.23	8.41	8.6	8.79	8.98	9.18
115	Head press PSIG	321	328	336	343	351	360
	Cap. Btuh/1000	61.8	67.9	74.3	81	88.1	95.5
	Unit kW	9.12	9.32	9.51	9.71	9.91	10.12

Notes:
1. Performance data calculated at 15°F subcooling and 20°F superheat and does not include capacity loss due to refrigerant lines.

Figure 8. Capacity Curves 7½ Tons TWA090A Heat Pump Only



Performance Data

10 Tons Gross Cooling Capacities and Capacity Curves

Table 8. Gross Cooling Capacities (MBh) 10 Tons TWA120A Heat Pump Only

Outdoor Temp (°F)		Suction Temperature (°F)					
		30	35	40	45	50	55
65	Head press PSIG	167	172	178	183	189	195
	Cap. Btuh/1000	110.6	121.1	132.1	143.7	155.9	168.6
	Unit kW	7.87	8.04	8.22	8.41	8.61	8.83
75	Head press PSIG	192	197	202	208	214	221
	Cap. Btuh/1000	105.4	115.4	126.1	137.3	149.1	161.4
	Unit kW	8.56	8.75	8.95	9.16	9.38	9.62
85	Head press PSIG	219	224	230	236	243	250
	Cap. Btuh/1000	100	109.6	119.9	130.7	142	153.9
	Unit kW	9.38	9.59	9.82	10.05	10.3	10.55
95	Head press PSIG	248	254	260	267	274	281
	Cap. Btuh/1000	94.5	103.7	113.5	123.8	134.7	146.1
	Unit kW		10.35	10.58	10.82	11.07	11.59
105	Head press PSIG	281	287	293	300	307	315
	Cap. Btuh/1000	88.8	97.6	107	116.8	127.1	137.8
	Unit kW	11.45	11.7	11.96	12.22	12.48	12.74
115	Head press PSIG	316	322	329	336	343	351
	Cap. Btuh/1000	83.1	91.4	100.3	109.6	119.2	129.2
	Unit kW	12.69	12.95	13.21	13.48	13.73	13.98

Notes:
1. Performance data calculated at 15°F subcooling and 20°F superheat and does not include capacity loss due to refrigerant lines.

Figure 9. Capacity Curves 10 Tons TWA120A Heat Pump Only

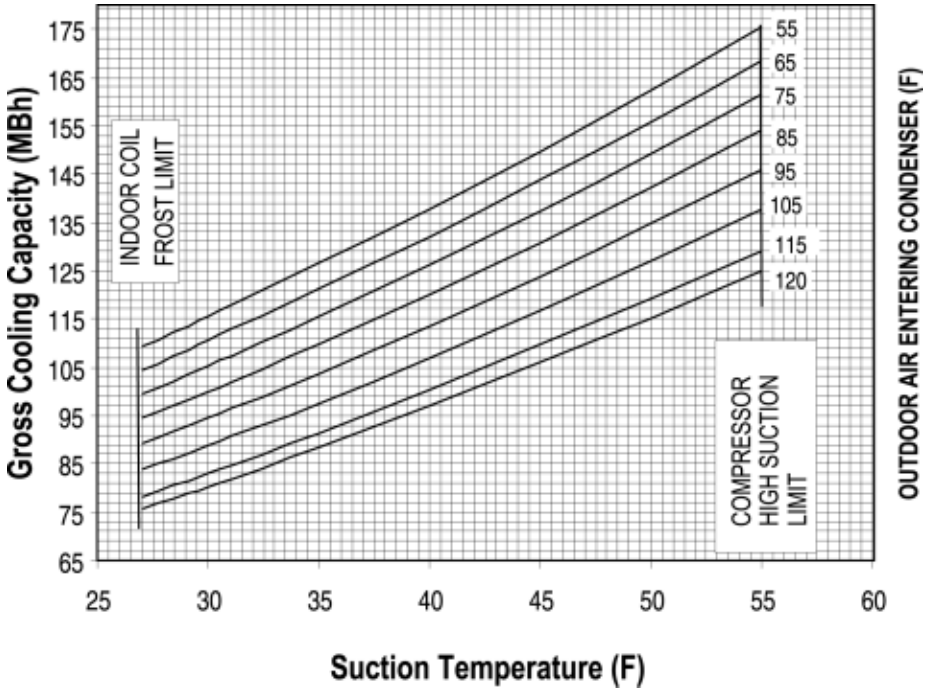
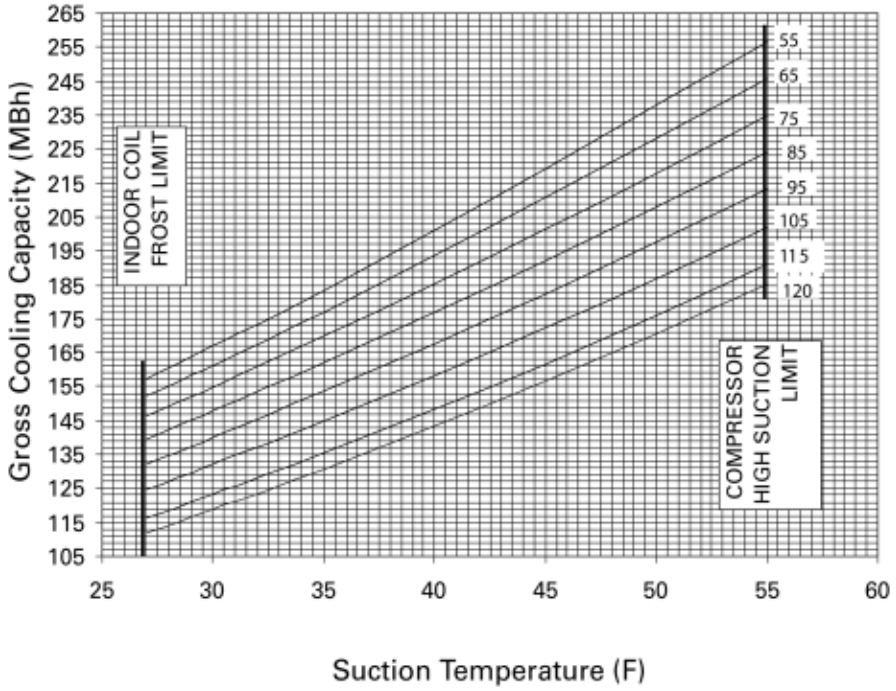


Table 9. Gross Cooling Capacities (MBh) 15 Tons TWA180B Heat Pump Only

Outdoor Temp (°F)		Suction Temperature (°F)					
		30	35	40	45	50	55
65	Head press PSIG	168	173	179	185	191	197
	Cap. Btuh/1000	161.3	177.1	193.6	210.6	228.1	245.8
	Unit kW	10.9	11.16	11.43	11.71	12.01	12.32
75	Head press PSIG	193	199	205	211	217	224
	Cap. Btuh/1000	154.9	169.9	185.5	201.5	218	234.8
	Unit kW	11.94	12.22	12.51	12.82	13.14	13.47
85	Head press PSIG	221	227	233	240	247	254
	Cap. Btuh/1000	147.7	162	176.8	192.1	207.8	224
	Unit kW	13.16	13.46	13.78	14.11	14.46	14.81
95	Head press PSIG	252	258	265	272	279	286
	Cap. Btuh/1000	140.1	153.7	167.8	182.4	197.5	213.1
	Unit kW	14.56	14.89	15.23	15.59	15.95	16.32
105	Head press PSIG	285	292	299	306	313	321
	Cap. Btuh/1000	131.9	144.8	158.2	172.2	186.8	202.1
	Unit kW	16.14	16.49	16.85	17.23	17.61	18
115	Head press PSIG	321	328	335	343	351	360
	Cap. Btuh/1000	123.3	135.5	148.3	161.8	176	190.9
	Unit kW	17.88	18.25	18.64	19.03	19.43	19.83

Notes:
1. Performance data calculated at 15°F subcooling and 20°F superheat and does not include capacity loss due to refrigerant lines.

Figure 10. Capacity Curves 15 Tons TWA180B Heat Pump Only



20 Tons Gross Cooling Capacities and Capacity Curves

Table 10. Gross Cooling Capacities (MBh) 20 Tons TWA240B Heat Pump Only

Outdoor Temp (°F)		Suction Temperature (°F)					
		30	35	40	45	50	55
65	Head press PSIG	183	190	196	203	211	219
	Cap. Btuh/1000	217.4	237.4	258.4	280.5	303.5	327.5
	Unit kW	16.09	16.51	16.96	17.44	17.96	18.5
75	Head press PSIG	209	216	223	231	239	248
	Cap. Btuh/1000	206.8	226	246.3	267.6	290	313.3
	Unit kW	17.58	18.05	18.56	19.11	19.68	20.28
85	Head press PSIG	238	245	253	261	270	279
	Cap. Btuh/1000	196	214.4	233.9	254.5	276	298.3
	Unit kW	19.35	19.88	20.44	21.03	21.65	22.27
95	Head press PSIG	269	277	285	294	303	313
	Cap. Btuh/1000	185	202.6	221.3	240.9	261.4	282.6
	Unit kW	21.39	21.97	22.57	23.2	23.83	24.47
105	Head press PSIG	304	312	320	329	339	349
	Cap. Btuh/1000	173.8	190.6	208.4	227.1	246.5	266.5
	Unit kW	23.68	24.31	24.95	25.6	26.24	26.87
115	Head press PSIG	341	349	358	368	378	388
	Cap. Btuh/1000	162.4	178.5	195.4	213	231.2	249.9
	Unit kW	26.23	26.89	27.56	28.22	28.86	29.46

Notes:
1. Performance data calculated at 15°F subcooling and 20°F superheat and does not include capacity loss due to refrigerant lines.

Figure 11. Capacity Curves 20 Tons TWA240B Heat Pump Only

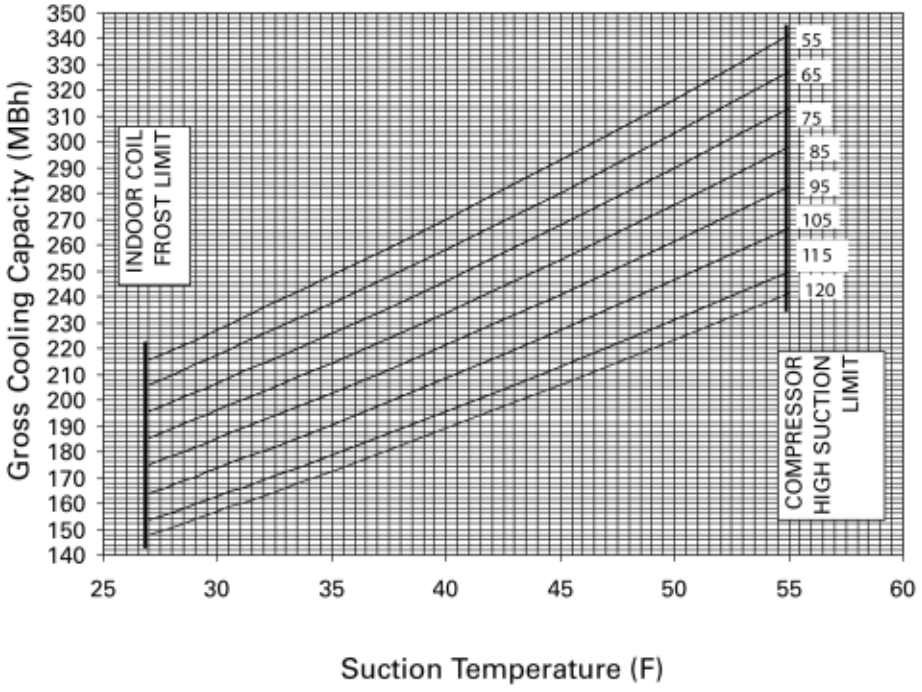


Table 11. Gross Heating Capacities (MBh) 7½ Tons TWA090A Heat Pump with 7½ Tons TWE090A Air Handler at 3000 CFM

Outdoor Temp (°F)	Heating Capacity (BTUH/1000) at Indicated Indoor Dry Bulb Temperature				Total Power in kW at Indicated Indoor Dry Bulb Temperature			
	60	70	75	80	60	70	75	80
-18	35.2	32	30.9	30.1	5.4	5.9	6.2	6.5
-13	36.8	34	33.1	32.5	5.5	6	6.3	6.6
-8	38.7	36.4	35.7	35.2	5.6	6.1	6.4	6.7
-3	41.1	39.2	38.7	38.3	5.7	6.2	6.5	6.8
2	44.1	42.5	42	41.8	5.8	6.3	6.6	6.9
7	47.5	46.3	45.9	45.7	5.9	6.5	6.8	7.1
12	51.3	50.3	50	49.9	6	6.6	6.9	7.2
17	55.6	54.8	54.5	54.3	6.2	6.7	7.1	7.4
22	60.3	59.6	59.3	59.1	6.3	6.9	7.2	7.6
27	65.5	64.7	64.4	64.2	6.4	7	7.4	7.7
32	71	70.2	69.9	69.6	6.6	7.2	7.5	7.9
37	76.7	75.8	75.4	75	6.7	7.4	7.7	8.1
42	82.7	81.7	81.2	80.7	6.9	7.5	7.9	8.3
47	89	87.8	87.3	86.7	7	7.7	8.1	8.5
52	95.7	94.4	93.7	93.1	7.2	7.9	8.3	8.7
57	102.7	101.2	100.5	99.7	7.3	8	8.4	8.9
62	109.9	108.2	107.4	106.6	7.5	8.2	8.6	9.1
67	117.3	115.5	114.6	113.8	7.7	8.4	8.8	9.3
72	124.8	122.9	122	121.1	7.9	8.6	9	9.5

Notes:
1. Rated with 25 feet of 13/8" suction and ½" liquid line.

Table 12. Gross Heating Capacities (MBh) 10 Tons TWA120A Heat Pump with 10 Tons TWE120A Air Handler at 4000 CFM

Outdoor Temp (°F)	Heating Capacity (BTUH/1000) at Indicated Indoor Dry Bulb Temperature				Total Power in kW at Indicated Indoor Dry Bulb Temperature			
	60	70	75	80	60	70	75	80
-18	29.9	42.3	46.5	49.9	7.4	8.4	9	9.5
-13	39.4	47.5	50.6	53	7.7	8.6	9.1	9.6
-8	46.9	52.6	54.8	56.7	7.9	8.8	9.2	9.7
-3	53.7	57.8	59.4	60.7	8.1	9	9.4	9.9
2	60.3	63.1	64.2	65	8.3	9.1	9.6	10
7	66.9	68.6	69.2	69.7	8.5	9.3	9.7	10.2
12	73.4	74.3	74.6	74.7	8.7	9.5	9.9	10.3
17	80.2	80.3	80.2	80.2	8.9	9.6	10.1	10.5
22	87.1	86.6	86.3	86	9	9.8	10.2	10.7
27	94.2	93.2	92.6	92.2	9.2	10	10.4	10.9
32	101.7	100.2	99.5	98.9	9.4	10.2	10.6	11.1
37	109.1	107.2	106.4	105.6	9.5	10.4	10.9	11.4
42	116.7	114.4	113.5	112.7	9.7	10.6	11.1	11.6
47	124.6	122.1	121.1	120.1	9.9	10.8	11.3	11.9
52	132.8	130.1	129	127.9	10.1	11.1	11.6	12.1
57	141.1	138.3	137.1	136	10.4	11.3	11.9	12.4
62	149.6	146.7	145.3	144.1	10.6	11.6	12.1	12.7
67	158.3	155.2	153.8	152.5	10.9	11.9	12.4	13.1
72	167.4	164.1	162.6	161.2	11.2	12.2	12.8	13.4

Notes:
1. Rated with 25 feet of 1 3/8" suction and ½" liquid line.

Performance Data

15, 20 Tons Gross Heating Capacities

Table 13. Gross Heating Capacities (MBh) 15 Tons TWA180B Heat Pump with 15 Tons TWE180B Air Handler at 6000 CFM

Outdoor Temp (°F)	Heating Capacity (BTUH/1000) at Indicated Indoor Dry Bulb Temperature				Total Power in kW at Indicated Indoor Dry Bulb Temperature			
	60	70	75	80	60	70	75	80
18	71	65.3	63.5	62.2	11.6	12.6	13.1	13.5
-13	73.8	69	67.5	66.5	11.8	12.7	13.2	13.8
-8	77.4	73.4	72.2	71.5	11.9	12.9	13.5	14
-3	81.8	78.7	77.8	77.3	12.1	13.2	13.7	14.3
2	87	84.6	84	83.7	12.3	13.4	14	14.6
7	93.1	91.2	90.8	90.7	12.6	13.6	14.2	14.9
12	100	98.6	98.3	98.3	12.8	13.9	14.5	15.2
17	107.8	106.7	106.4	106.5	13	14.2	14.8	15.5
22	116.5	115.5	115.3	115.3	13.3	14.5	15.1	15.8
27	126	125.1	124.9	124.8	13.6	14.8	15.5	16.2
32	136.3	135.4	135.1	134.9	13.9	15.1	15.8	16.6
37	146.8	145.8	145.4	145	14.1	15.4	16.1	16.9
42	157.9	156.7	156.1	155.6	14.4	15.8	16.5	17.3
47	169.7	168.2	167.5	166.8	14.7	16.1	16.9	17.7
52	182.2	180.4	179.6	178.8	15.1	16.5	17.2	18.1
57	195.2	193.2	192.2	191.2	15.4	16.8	17.6	18.5
62	208.7	206.4	205.3	204.2	15.7	17.2	18	18.9
67	222.6	220	218.8	217.6	16.1	17.6	18.4	19.3
72	237	234.2	232.9	231.7	16.5	18	18.8	19.7

Notes:
1. Rated with 25 feet of 1 3/8" suction and ½" liquid line.

Table 14. Gross Heating Capacities (MBh) 20 Tons TWA240B Heat Pump with 20Tons TWE240B Air Handler at 8000 CFM

Outdoor Temp (°F)	Heating Capacity (BTUH/1000) at Indicated Indoor Dry Bulb Temperature				Total Power in kW at Indicated Indoor Dry Bulb Temperature			
	60	70	75	80	60	70	75	80
-18	64.1	89.6	97.7	103.6	14.7	17.1	18.3	19.4
-13	81.2	97.6	103.4	107.6	15.4	17.4	18.5	19.5
-8	94.5	106.1	110.1	113.1	15.9	17.8	18.8	19.8
-3	106.6	114.7	117.5	119.5	16.3	18.1	19.1	20.1
2	118.3	123.8	125.6	126.9	16.7	18.5	19.4	20.4
7	130.1	133.4	134.5	135.1	17.1	18.8	19.7	20.7
12	141.9	143.6	144	144.2	17.5	19.2	20.1	21.1
17	154.1	154.4	154.4	154.2	17.9	19.6	20.5	21.6
22	166.7	166	165.5	165	18.2	20	21	22
27	179.9	178.3	177.6	176.8	18.6	20.4	21.4	22.5
32	193.7	191.5	190.5	189.5	19	20.9	21.9	23.1
37	207.6	204.8	203.6	202.5	19.4	21.4	22.4	23.6
42	221.9	218.8	217.4	216.2	19.9	21.9	23	24.2
47	237	233.5	232	230.7	20.4	22.4	23.6	24.8
52	253	249.3	247.6	246.2	20.9	23	24.2	25.5
57	269.6	265.7	263.9	262.3	21.4	23.6	24.9	26.2
62	286.8	282.6	280.6	278.9	22	24.3	25.5	26.9
67	304.4	299.9	297.8	295.8	22.7	25	26.3	27.6
72	322.8	317.9	315.6	313.4	23.4	25.8	27	28.4

Notes:
1. Rated with 25 feet of 1 3/8" suction and ½" liquid line.

Table 15. Evaporator Fan Performance 5 Ton TWE060A, TWE060B - Air Handler

	External Static Pressure (Inches of Water Gauge)																							
	.10"		.20"		.30"		.40"		.50"		.60"		.70"		.80"		.90"		1.00"		1.10"		1.20"	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	.75 HP Standard Motor & Field Supplied Low Static Drive[i]														.75 HP Standard Motor & Sheaves									
1600	578	0.34	625	0.38	676	0.43	727	0.48	778	0.52	828	0.57	879	0.62	930	0.67	963	0.70	995	0.74	1028	0.77	1060	0.8
1700	601	0.35	648	0.4	696	0.44	744	0.49	792	0.54	841	0.59	889	0.64	937	0.69	971	0.73	1005	0.77	1039	0.81	1073	0.84
1800	625	0.36	671	0.41	716	0.46	762	0.51	807	0.56	853	0.61	898	0.66	944	0.71	979	0.76	1015	0.8	1050	0.84	1085	0.88
1900	642	0.4	687	0.45	731	0.5	776	0.55	820	0.6	865	0.66	909	0.71	951	0.75	987	0.80	1023	0.84	1059	0.89	1095	0.93
2000	659	0.44	703	0.49	746	0.54	790	0.6	833	0.65	877	0.7	920	0.75	957	0.8	994	0.84	1031	0.89	1069	0.93	1106	0.98
2100	674	0.48	722	0.54	770	0.6	817	0.65	857	0.7	897	0.75	936	0.8	973	0.85	1009	0.89	1046	0.94	1082	0.99	1119	1.04
2200	689	0.52	741	0.59	793	0.65	845	0.71	881	0.76	917	0.8	953	0.85	989	0.9	1024	0.95	1060	1	1096	104	—	—
2300	710	0.57	761	0.63	812	0.7	863	0.76	897	0.81	932	0.86	966	0.91	1001	0.96	1035	1	—	—	—	—	—	—
2400	730	0.61	780	0.68	830	0.75	880	0.82	913	0.87	946	0.91	979	0.96	1013	1.01	—	—	—	—	—	—	—	—
							1 HP Oversized Motor & Sheaves																	

Notes:
1. Data includes pressure drop due to wet coil and 1" filter.
2. Fan motor heat (MBh) = 3.15 x BHP.
3. Trane's factory supplied motors, in commercial equipment, are definite purpose motors, specifically designed and tested to operate reliably and continuously at all cataloged conditions. Using the full horsepower range of our fan motors as shown in our tabular data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.

[i] Field Supplied Low Static Drive (use Table 16)

Table 16. Low Static Fan Drive 5 Ton TWE060A, TWE060B Air Handler[i]

Motor Sheave Turns Open	Nominal RPM
0	752
1	708
2	663
3	619
4	574
5	530

[i] Field supplied components required:
Blower Sheave: Fixed Pitch (7.8 inch Pitch Diameter)
Blower Sheave: 0.625 inch Bore, Single Groove, "A" Belt
Belt: A48

Evaporator Fan Performance, Low Static Fan Drive, 7½ Tons

Table 17. Evaporator Fan Performance 7 1/2 Ton TWE090A, TWE090B - Air Handler

	External Static Pressure (Inches of Water Gauge)																			
	.10"		.20"		.30"		.40"		.50"		.60"		.70"		.80"		.90"		1.00"	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	1.5 HP Standard Motor & Field Supplied Low Static Drive[i]							1.5 HP Standard Motor & Low Static Drive Kit								1.5 HP Standard Motor & Sheaves				
2400	429	0.45	475	0.51	522	0.58	569	0.65	615	0.71	662	0.78	708	0.84	755	0.91	783	0.98	811	1.05
2550	453	0.48	496	0.55	539	0.61	582	0.68	626	0.74	669	0.81	712	0.87	756	0.94	785	1	814	1.08
2700	476	0.52	516	0.58	556	0.65	596	0.71	636	0.77	676	0.83	716	0.9	758	0.96	787	1.02	816	1.11
2850	500	0.55	537	0.62	573	0.68	610	0.74	646	0.8	683	0.86	720	0.92	759	0.99	788	1.05	819	1.14
3000	524	0.59	557	0.65	590	0.71	624	0.77	657	0.83	690	0.89	723	0.95	760	1.01	790	1.07	821	1.17
3150	546	0.62	577	0.68	609	0.75	640	0.81	672	0.87	703	0.94	735	1.00	768	1.07	798	1.15	829	1.25
3300	568	0.65	598	0.72	628	0.79	657	0.85	687	0.92	717	0.99	746	1.05	776	1.12	807	1.22	837	1.33
3450	589	0.67	618	0.75	647	0.83	676	0.91	705	0.99	733	1.07	762	1.15	791	1.23	820	1.33	849	1.42
3600	611	0.69	639	0.79	666	0.88	694	0.97	722	1.06	750	1.16	778	1.25	806	1.34	834	1.43	862	1.51

	External Static Pressure (Inches of Water Gauge)															
	1.10"		1.20"		1.30"		1.40"		1.50"		1.60"		1.70"		1.80"	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	1.5 HP Standard Motor & Sheaves															
2400	840	1.11	868	1.18	896	1.25	924	1.32	952	1.39	890	1.46	1009	1.52	1037	1.59
2550	843	1.15	872	1.23	901	1.31	930	1.38	959	1.46	988	1.54	1016	1.61	1045	1.69
2700	846	1.19	876	1.28	905	1.36	935	1.45	965	1.53	995	1.62	1024	1.7	1054	1.79
2850	849	1.23	880	1.33	910	1.42	941	1.51	971	1.6	1002	1.7	1032	1.79	1063	1.88
3000	853	1.27	884	1.37	915	1.48	946	1.58	978	1.68	1009	1.78	1040	1.88	1071	1.98
3150	860	1.35	891	1.45	922	1.56	958	1.66	984	1.76	1014	1.86	1044	1.94	—	—
3300	868	1.43	898	1.54	929	1.64	959	1.74	990	1.85	1020	1.95	1049	2.01	—	—
3450	879	1.52	908	1.61	937	1.71	966	1.8	995	1.9	1025	2	—	—	—	—
3600	890	1.6	918	1.69	945	1.78	973	1.87	1001	1.96	—	—	—	—	—	—
	2 HP Oversized Motor & Sheaves															

Notes:
1. Data includes pressure drop due to wet coil and 1" filter.
2. Fan motor heat (MBh) = 3.15 x BHP.
3. Trane's factory supplied motors, in commercial equipment, are definite purpose motors, specifically designed and tested to operate reliably and continuously at all cataloged conditions. Using the full horsepower range of our fan motors as shown in our tabular data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.

[i] Field Supplied Low Static Drive (use Table 18)

Table 18. Low Static Fan Drive 7½ Tons TWE090A, B Air Handler

Field Supplied Low Static Fan Drive 7½ Tons TWE090A, B Air Handler[i]		Low Static Fan Drive Accessory Kit 7½ Tons TWE090A, B Air Handler	
Motor Sheave Turns Open	Nominal RPM	Motor Sheave Turns Open	Nominal RPM
0	598	0	733
1	563	1	690
2	528	2	647
3	493	3	604
4	458	4	561
5	422	5	518

[i] Field supplied components required:
Blower Sheave: Fixed Pitch (9.8 inch Pitch Diameter), Blower Sheave: 1.00 inch Bore, Single Groove, "A" Belt. Belt: A55

Table 19. Evaporator Fan Performance 10 Tons TWE120A1, TWE120B1 - Air Handler

	External Static Pressure (Inches of Water Gauge)																											
	.10"		.20"		.30"		.40"		.50"		.60"		.70"		.80"		.90"		1.00"		1.20"		1.40"		1.60"	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	2 HP Standard Motor and Field Supplied Low Static Drive[i]														2 HP Standard Motor and Sheaves											
3200	—	—	—	—	570	0.67	603	0.75	636	0.83	670	0.91	703	1.00	736	1.08	756	1.14	784	1.2	838	1.32	890	1.49	942	1.66
3400	—	—	560	0.71	592	0.79	623	0.88	652	0.95	685	1.04	716	1.12	743	1.18	762	1.24	790	1.3	844	1.43	895	1.59	948	1.8
3600	557	0.77	583	0.84	613	0.92	643	1.01	667	1.07	700	1.16	730	1.23	750	1.27	768	1.34	797	1.41	850	1.55	900	1.69	954	1.94
3800	579	0.94	605	1.01	634	1.09	663	1.18	683	1.24	710	1.29	738	1.37	762	1.42	785	1.49	813	1.56	861	1.72	911	1.87	—	—
4000	602	1.11	628	1.17	656	1.26	683	1.35	698	1.4	720	1.43	747	1.5	773	1.58	801	1.64	829	1.71	872	1.89	922	2.04	—	—
4200	626	1.23	651	1.31	677	1.4	703	1.48	714	1.53	741	1.59	765	1.66	790	1.72	815	1.81	841	1.9	888	2.08	—	—	—	—
4400	649	1.36	674	1.45	698	1.53	723	1.62	729	1.65	761	1.76	784	1.81	807	1.87	830	1.98	852	2.09	—	—	—	—	—	—
4600	669	1.52	692	1.62	714	1.69	735	1.77	747	1.82	782	1.92	798	1.99	815	2.06	—	—	—	—	—	—	—	—	—	—
4800	689	1.69	711	1.79	729	1.85	746	1.92	764	1.98	802	2.09	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Notes:
1. Data includes pressure drop due to wet coil and 1" filter.
2. Fan motor heat (MBh) = 3.15 x BHP.
3. Trane's factory supplied motors, in commercial equipment, are definite purpose motors, specifically designed and tested to operate reliably and continuously at all cataloged conditions. Using the full horsepower range of our fan motors as shown in our tabular data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.

(i) Field Supplied Low Static Drive (use Table 20)

Table 20. Low Static Fan Drive 10 Tons TWE120A1, TWE120B1 - Air Handler[i]

Motor Sheave Turns Open	Nominal RPM
0	745
1	706
2	666
3	627
4	588
5	549

(i) Field supplied components required:
Blower Sheave: Fixed Pitch (8.8 inch Pitch Diameter)
Blower Sheave: 1.00 inch Bore, Single Groove, "A" Belt
Belt: A54

10 Tons Evaporator Fan Performance

Table 21. Evaporator Fan Performance 10 Tons TWE120A3, AW; TWE120B3, BW - Air Handler

	External Static Pressure (Inches of Water Gauge)																			
	.10"		.20"		.30"		.40"		.50"		.60"		.70"		.80"		.90"		1.00"	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	2 HP Standard Motor & Field Supplied Low Static Drive[i]												2 HP Standard Motor & Sheaves							
3200	—	—	—	—	570	0.67	603	0.75	636	0.83	670	0.91	703	1.00	736	1.08	756	1.14	784	1.2
3400	—	—	560	0.71	592	0.79	623	0.88	652	0.95	685	1.04	716	1.12	743	1.18	762	1.24	790	1.3
3600	557	0.77	583	0.84	613	0.92	643	1.01	667	1.07	700	1.16	730	1.23	750	1.27	768	1.34	797	1.41
3800	579	0.94	605	1.01	634	1.09	663	1.18	683	1.24	710	1.29	738	1.37	762	1.42	785	1.49	813	1.56
4000	602	1.11	628	1.17	656	1.26	683	1.35	698	1.40	720	1.43	747	1.5	773	1.58	801	1.64	829	1.71
4200	626	1.23	651	1.31	677	1.4	703	1.48	714	1.53	741	1.59	765	1.66	790	1.72	815	1.81	841	1.9
4400	649	1.36	674	1.45	698	1.53	723	1.62	729	1.65	761	1.76	784	1.81	807	1.87	830	1.98	852	2.09
4700	669	1.52	792	1.62	714	1.69	735	1.77	747	1.82	782	1.92	798	1.99	815	2.06	837	2.18	862	2.29
4800	689	1.69	711	1.79	729	1.85	746	1.92	764	1.98	802	2.09	812	2.17	822	2.24	844	2.39	872	2.48
										3 HP Oversized Motor & Sheaves											

	External Static Pressure (Inches of Water Gauge)													
	1.20"		1.40"		1.60"		1.80"		2.00"		2.20"		2.40"	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	2 HP Standard Motor & Sheaves													
3200	838	1.32	890	1.49	942	1.66	1001	1.84	1051	2.03	1106	2.24	1162	2.44
3400	844	1.43	895	1.59	948	1.80	1009	1.98	1057	2.17	1111	2.37	1165	2.57
3600	850	1.55	900	1.69	954	1.94	1016	2.13	1065	2.31	1115	2.51	1167	2.7
3800	861	1.72	911	1.87	959	2.15	1024	2.35	1070	2.54	1120	2.73	1169	2.92
4000	872	1.89	922	2.04	965	2.36	1031	2.57	1077	2.76	1124	2.95	—	—
4200	888	2.08	941	2.29	984	2.54	1039	2.73	1083	2.91	1129	3.10	—	—
4400	904	2.27	960	2.53	1003	2.71	1047	2.89	1090	3.06	—	—	—	—
4700	922	2.45	979	2.67	1020	2.86	1061	3.06	—	—	—	—	—	—
4800	939	2.64	997	2.8	1036	3.02	—	—	—	—	—	—	—	—
	3 HP Oversized Motor & Sheaves													

Notes:
1. Data includes pressure drop due to wet coil and 1" filter.
2. Fan motor heat (MBh) = 3.15 x BHP.
3. Trane's factory supplied motors, in commercial equipment, are definite purpose motors, specifically designed and tested to operate reliably and continuously at all cataloged conditions. Using the full horsepower range of our fan motors as shown in our tabular data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.

[i] Field Supplied Low Static Drive (use Table 22)

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Table 22. Low Static Fan Drive 10 Tons TWE120A3, AW; BE, BW Air Handler[i]

Motor Sheave Turns Open	Nominal RPM
0	745
1	706
2	666
3	627
4	588
5	549

[i] Field supplied components required:
Blower Sheave: Fixed Pitch (8.8 inch Pitch Diameter)
Blower Sheave: 1.00 inch Bore, Single Groove, "A" Belt
Belt: A54

Table 23. Evaporator Fan Performance 15 Tons TWE180B - Air Handler

	External Static Pressure (Inches of Water Gauge)																					
	.10"		.20"		.30"		.40"		.50"		.60"		.70"		.80"		.90"		1.00"		1.20	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	3 HP Standard Motor and Field Supplied Low Static Drive[i]												3 HP Standard Motor and Sheaves									
4500	637	1.4	662	1.44	687	1.49	701	1.53	717	1.58	732	1.63	747	1.64	754	1.65	782	1.67	817	1.76	873	1.96
4800	642	1.42	667	1.51	692	1.54	706	1.63	722	1.64	737	1.65	752	1.66	767	1.68	795	1.73	831	1.82	887	2.02
5100	647	1.45	672	1.52	697	1.57	713	1.66	726	1.68	740	1.70	761	1.72	783	1.77	811	1.85	843	1.96	900	2.19
5400	652	1.47	677	1.54	702	1.6	719	1.69	730	1.72	742	1.75	769	1.78	798	1.87	827	1.98	856	2.09	914	2.37
5700	653	1.48	679	1.56	706	1.67	725	1.75	741	1.80	758	1.84	786	1.92	815	2.02	843	2.14	872	2.27	932	2.57
6000	655	1.49	681	1.59	709	1.74	731	1.8	752	1.87	774	1.94	803	2.05	831	2.17	860	2.29	889	2.44	950	2.78
6300	658	1.51	687	1.63	716	1.79	741	1.89	765	1.98	792	2.09	823	2.22	853	2.35	883	2.49	913	2.64	974	2.96
6600	663	1.54	693	1.68	723	1.84	750	1.97	778	2.09	811	2.24	843	2.39	875	2.53	906	2.69	936	2.84	997	3.15
6900	670	1.62	700	1.77	735	1.98	767	2.15	799	2.29	832	2.44	865	2.61	900	2.79	934	2.98	967	3.16	1019	3.48
7200	677	1.7	707	1.86	747	2.12	785	2.33	819	2.49	853	2.65	888	2.83	926	3.05	963	3.27	997	3.49	1041	3.81
																	5 HP Oversized Motor and Sheaves					

	External Static Pressure (Inches of Water Gauge)											
	1.40"		1.60"		1.80"		2.00"		2.20"		2.40"	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	3 HP Standard Motor and Sheaves					5 HP Oversized Motor and Sheaves						
4500	929	2.19	986	2.46	1035	2.74	1084	3.01	1132	3.28	-	-
4800	943	2.29	999	2.56	1046	2.83	1095	3.11	1143	3.38	-	-
5100	957	2.48	1012	2.76	1058	3.04	1105	3.31	1152	3.57	-	-
5400	972	2.67	1024	2.96	1070	3.24	1116	3.51	-	-	-	-
5700	990	2.89	1038	3.18	1083	3.46	1127	3.74	-	-	-	-
6000	1008	3.11	1052	3.39	1096	3.68	1138	3.96	-	-	-	-
6300	1025	3.3	1069	3.61	1113	3.92	1152	4.21	-	-	-	-
6600	1042	3.49	1087	3.83	1130	4.16	-	-	-	-	-	-
6900	1063	3.81	1107	4.15	1146	4.49	-	-	-	-	-	-
7200	1085	4.14	1127	4.47	-	-	-	-	-	-	-	-

Notes:

1. Data includes pressure drop due to wet coil and 2" filter.
2. Fan motor heat (MBh) = 3.15 x BHP.
3. Trane's factory supplied motors, in commercial equipment, are definite purpose motors, specifically designed and tested to operate reliably and continuously at all cataloged conditions. Using the full horsepower range of our fan motors as shown in our tabular data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.

[i] Field Supplied Low Static Drive (use Table 24)

Table 24. Low Static Fan Drive 15 Ton TWE180B Air Handler[i]

Motor Sheave Turns Open	Nominal RPM
0	776
1	748
2	720
3	692
4	663
5	635
6	607

[i] Field supplied components required:
Motor Sheave: Variable Pitch (4.3-5.5 inch Pitch Diameter), 0.875 inch Bore, Single Groove, "B" Belt.

Blower Sheave: Fixed Pitch (12.4 inch Pitch Diameter), 1.4375 inch Bore, Single Groove, "B" Belt.
Belt: B67

Evaporator Fan Performance, Low Static Fan Drive, 20 Tons

Table 25. Evaporator Fan Performance 20 Ton TWE240B - Air Handler

External Static Pressure (Inches of Water Gauge)																				
	.10"		.20"		.30"		.40"		.50"		.60"		.70"		.80"		.90"		1.00"	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
			5 HP Standard Motor & Field Supplied Low Static Drive[i]										5 HP Standard Motor & Low Static Drive Kit							
6400	—	—	—	—	570	1.41	612	1.57	654	1.7	696	1.83	743	2.06	781	2.25	808	2.4	835	2.55
6800	—	—	—	—	593	1.58	635	1.74	677	1.90	722	2.08	762	2.29	794	2.46	820	2.61	846	2.76
7200	—	—	573	1.58	615	1.75	657	1.92	700	2.09	747	2.33	781	2.52	806	2.66	831	2.81	856	2.96
7600	—	—	603	1.84	651	1.98	694	2.15	731	2.38	766	2.57	795	2.74	819	2.88	844	3.02	869	3.17
8000	585	1.97	633	2.11	686	2.21	730	2.39	761	2.66	785	2.81	809	2.95	832	3.09	857	3.23	882	3.37
8400	619	2.2	657	2.35	710	2.54	752	2.73	778	2.94	801	3.09	823	3.23	848	3.39	873	3.55	899	3.71
8800	652	2.43	680	2.60	733	2.86	773	3.07	794	3.22	816	3.36	837	3.50	863	3.68	889	3.86	915	4.04
9200	682	2.76	723	2.98	760	3.19	790	3.37	811	3.52	834	3.68	858	3.84	884	4.01	909	4.2	932	4.4
9600	711	3.08	766	3.36	787	3.52	807	3.67	828	3.82	852	3.99	878	4.17	904	4.35	929	4.53	949	4.75
													5 HP Standard Motor & Sheaves							

External Static Pressure (Inches of Water Gauge)																
	1.20"		1.40"		1.60"		1.80"		2.00"		2.20"		2.40"		2.60"	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	5 HP Standard Motor & Sheaves								7.5 HP Oversized Motor & Sheaves							
6400	883	2.86	930	3.16	976	3.52	1021	3.89	1066	4.26	1111	4.62	1156	4.99	1201	5.36
6800	894	3.07	941	3.4	986	3.78	1030	4.16	1075	4.55	1119	4.93	1164	5.31	—	—
7200	904	3.29	951	3.65	995	4.04	1039	4.44	1083	4.84	1127	5.23	1171	5.63	—	—
7600	919	3.55	963	3.94	1007	4.34	1050	4.75	1093	5.16	1136	5.57	1179	5.98	—	—
8000	933	3.8	975	4.23	1018	4.65	1060	5.07	1103	5.49	1145	5.91	1187	6.34	—	—
8400	947	4.14	989	4.57	1032	5.01	1074	5.44	1117	5.87	1159	6.31	1200	6.73	—	—
8800	960	4.47	1002	4.92	1045	5.36	1087	5.81	1130	6.26	1172	6.70	—	—	—	—
9200	975	4.83	1016	5.28	1058	5.73	1099	6.17	1141	6.62	1182	7.07	—	—	—	—
9600	990	5.2	1030	5.65	1071	6.09	1111	6.54	1152	6.99	1192	7.43	—	—	—	—

Notes:
1. Data includes pressure drop due to wet coil and 2" filter.
2. Fan motor heat (MBh) = 3.15 x BHP.
3. Trane's factory supplied motors, in commercial equipment, are definite purpose motors, specifically designed and tested to operate reliably and continuously at all cataloged conditions. Using the full horsepower range of our fan motors as shown in our tabular data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.

[i] Field Supplied Low Static Drive (use Table 26)

Table 26. Low Static Fan Drive 20 Tons TWE240B/TWE240E Air Handler

Field Supplied Low Static Fan Drive 20 Tons TWE240B/TWE240E Air Handler[i]	
Motor Sheave Turns Open	Nominal RPM
0	712
1	686
2	660
3	634
4	609
5	583
6	557

Low Static Fan Drive Accessory Kit 20 Tons TWE240B/TWE240E Air Handler	
Motor Sheave Turns Open	Nominal RPM
0	857
1	831
2	805
3	779
4	753
5	727
6	701

[i] Field supplied components required:
Motor Sheave: Variable Pitch (4.3-5.5 inch Pitch Diameter) 1.125 inch Bore, Single Groove, "B" Belt.

Blower Sheave: Fixed Pitch (13.4 inch Pitch Diameter), 1.4375 inch Bore, Single Groove, "B" Belt.
Belt: B67

Table 27. Standard Motor and Sheave/Fan Speed (RPM) - Air Handler

		Sheave Position						
Tons	Unit Model No.	6 Turns Open	5 Turns Open	4 Turns Open	3 Turns Open	2 Turns Open	1 Turns Open	Closed
5	TWE060A(i)	-	714	773	833	892	952	1011
	TWE060B(i)							
7 1/2	TWE090A(ii)	-	726	787	847	908	968	1029
	TWE090B(ii)							
10	TWE120A1, B1(iii)	-	702	760	819	877	936	994
	TWE120A3, AW(ii)	-	710	761	812	863	913	964
	TWE120B3, BW(ii)							
15	TWE180B(ii)	760	795	831	866	902	937	-
20	TWE240B(iv)/TWE240E(iv)	862	894	926	958	990	1022	1054

(i) Factory setting is 3.0 turns open.
(ii) Factory setting is 4.5 turns open.
(iii) Factory setting is 4.0 turns open.
(iv) Factory setting is 6.0 turns open.

Table 28. Oversized Motor and Sheave/Fan Speed (RPM) - Air Handler

		Sheave Position						
Tons	Unit Model No.	6 Turns Open	5 Turns Open	4 Turns Open	3 Turns Open	2 Turns Open	1 Turns Open	Closed
5	TWE060A1,B1	-	828	897	966	1035	1104	1173
	TWE060A3,A4,AW	-	863	934	1006	1078	1150	1222
	TWE060B3,B4,BW							
7½	TWE090A1	-	845	915	986	1056	1127	1197
	TWE090A3,AW	-	847	908	968	1029	1089	1150
10	TWE120A3,AW(i)	-	915	969	1023	1077	1131	1185
	TWE120B3,BW(i)							
	TWE120A3,AW(ii)	-	733	776	819	863	906	949
	TWE120B3,BW(ii)							
15	TWE180B	946	981	1016	1052	1087	1122	1157
20	TWE240B/TWE240E	-	991	1040	1091	1140	1190	1239

(i) High Static Motor with 6 1/2" Fan Sheave.
(ii) High Static Motor with 8" Fan Sheave.

Table 29. Electric Heat Discharge Plenum and Grille Airflow (CFM)

		Electric Heater	Airflow (CFM)	
Tons	Unit Model No.	Model No.	Minimum	Maximum
5	TWE060A1, B1	BAYHTRL117A	2000	2400
	TWE060A3, B3	BAYHTRL315A	2000	2400
	TWE060A4, B4	BAYHTRL415A	2000	2400
7 1/2	TWE090A1, B1	BAYHTRL117A	3000	3600
		BAYHTRL123A	3375	3600
	TWE090A3, B3	BAYHTRL315A	2625	3600
		BAYHTRL325A	3000	3600
	TWE090A3, B3	BAYHTRL415A	2625	3600
		BAYHTRL425A	2625	3600
10	TWE120A1, B1	BAYHTRL117A	3500	4800
		BAYHTRL123A	4000	4800
	TWE120A3, B3	BAYHTRL315A	4000	4800
		BAYHTRL325A	3500	4800
	TWE120A3, B3(i)	BAYHTRL415A	3500	4800
		BAYHTRL425A	3500	4800
15	TWE180B3	BAYHTRM330A	5250	7200
	TWE180B4	BAYHTRM430A	5250	7200
20	TWE240B3/TWE240E3	BAYHTRM330A	7000	9600
	TWE240B4/TWE240E4	BAYHTRM430A	7000	9600

(i) When wired for 460 Volt.

Performance Data

Discharge Plenum and Grille Assembly Throw Distance

Table 30. Discharge Plenum and Grille Assembly Throw Distance (ft) — Air Handler

			Louver Angle Deflection Position			
Tons	**Model No.**	**CFM**	**Straight**	**20°**	**40°**	**55°**
		1600	42	31	26	20
	TWE060A	1800	46	37	29	22
5	TWE060B	2000	48	43	33	24
		2200	51	50	36	25
		2400	54	57	39	29
		2400	52	43	35	29
	TWE090A	2700	55	48	38	31
7½	TWE090B	3000	58	53	42	32
		3300	62	57	46	35
		3600	66	60	50	37
		3200	56	46	38	30
	TWE120A	3600	62	51	42	33
10	TWE120B	4000	66	57	47	35
		4400	71	62	52	38
		4800	76	67	56	42
		4900	47	38	32	25
	TWE180B	5400	52	44	37	29
15		6000	57	49	41	32
		6600	61	53	43	34
		7200	65	57	46	35
		6400	56	46	38	30
	TWE240B/	7200	62	51	42	33
20	TWE240E	8000	66	57	47	35
		8800	71	62	52	38
		9600	76	67	56	42

Notes:

1. Throw distance values are based on a terminal velocity of 75 FPM.

2. Throw distance values at other terminal velocities may be established by multiplying throw distances in the table above by throw factor

Terminal Velocity	Throw Factor
50 FPM	x 1.50
100 FPM	x .75
150 FPM	x .50

Table 31. Static Pressure Drop Through Accessories (inches of water column)[(i)] - Air Handlers

Tons	Unit Model No.	CFM	Return Grille	Discharge Plenum and Grille[(ii)]	Electric Heaters (kW)				Hydronic Coils	
					5-10	15-20	25-30	35-50	Steam	Hot Water
		1600	0.12	0.21	0.08	0.08	0.14	-	.44	.31
5	TWE060A	2000	0.18	0.33	0.13	0.13	0.19	-	.62	.44
	TWE060B	2400	0.28	0.47	0.19	0.19	0.37	-	.80	.59
		2400	0.08	0.27	0.03	0.06	0.08	0.12	.38	.23
7½	TWE090A	3000	0.13	0.4	0.06	0.12	0.17	0.23	.50	.33
	TWE090B	3600	0.18	0.58	0.08	0.16	0.24	0.32	.66	.44
		3200	0.07	0.43	0.06	0.13	0.19	0.26	.42	.40
10	TWE120A	4000	0.11	0.66	0.10	0.20	0.30	0.40	.59	.56
	TWE120B	4800	0.15	0.95	0.14	0.28	0.42	0.57	.76	.75
		4800	0.09	0.23	0.03	0.03	0.06	0.08	.46	.38
15	TWE180B	6000	0.15	0.34	0.06	0.06	0.12	0.17	.64	.54
		7200	0.2	0.49	0.08	0.08	0.16	0.24	.82	.72
		6400	0.11	0.43	0.06	0.06	0.13	0.19	.50	.41
20	TWE240B/TWE240E	8000	0.17	0.66	0.10	0.10	0.20	0.30	.70	.58
		9600	0.23	0.95	0.14	0.14	0.28	0.42	.89	.78

(i) Return air filter ESP included in Fan Performance Table data.
(ii) At louver opening angle of 42 degrees. For ESP at other angle openings, see accessory Installer's Guide.

Table 32. Auxiliary Electric Heat Capacity - Air Handler

Unit Model No.	Total kW	No. of Stages	Stage 1		Stage 2		Total	
			kW Input	BTUH Output	kW Input	BTUH Output	kW Input	BTUH Output
	5.00	1	5.00	17,065	-	-	5.00	17,065
TWE060A3, A4, AW	9.96	1	9.96	33,993	-	-	9.96	33,993
TWE060B3, B4	14.96	1	14.96	51,058	-	-	14.96	51,058
	24.92	2	14.96	51,058	9.96	33,993	24.92	85,051
	5.00	1	5.00	17,065	-	-	5.00	17,065
TWE090,120A3,AW	9.96	1	9.96	33,993	-	-	9.96	33,993
TWE090B3	14.96	1	14.96	51,058	-	-	14.96	51,058
TWE120B3, BW	24.92	2	14.96	51,058	9.96	33,993	24.92	85,051
TWE060,090,120A1	5.76	1	5.76	19,659	-	-	5.76	19,659
TWE060B1	11.52	1	11.52	39,318	-	-	11.52	39,318
TWE090B1	17.28	1	17.28	58,977	-	-	17.28	58,977
TWE120B1	23.04	2	11.52	39,318	11.52	39,318	23.04	78,636
TWE090,120A1 TWE120B1	28.8	2	17.28	58,977	11.52	39,318	28.8	98,295
TWE090,120A3, AW	34.88	2	19.92	67,987	14.96	51,058	34.88	119,045
TWE120B3, BW	10.00	1	10.00	34,130	-	-	10.00	34,130
	19.92	1	19.92	67,987	-	-	19.92	67,987
TWE180, 240B, 240E	29.92	2	19.92	67,987	10.00	34,130	29.92	102,117
	49.84	2	29.92	102,117	19.92	67,987	49.84	170,104

Notes: Heaters are rated at 240V, 480V and 600V. For other than rated voltage capacity = (Voltage/Related Voltage)^2 x Rated Capacity.

Controls

Thermostats

Two stage heating/cooling or one stage heating/cooling thermostats are available in either manual or automatic changeover.

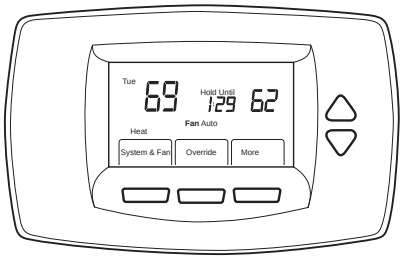
Programmable Electronic Night Setback Thermostat

Heating setback and cooling setup with 7-day, 5-1-1 programming capability. Available in 2 heating/cooling or 1 heating/cooling versions with automatic changeover.

Digital Display Programmable Thermostat (2H/2C)

Two Heat/Two Cool digital display thermostat. 7-day programmable stat with night setback shall be available.

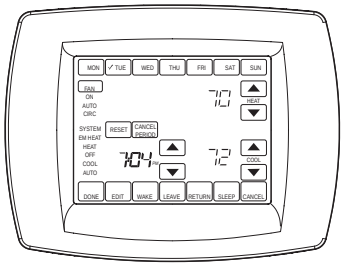
Figure 12.



Touchscreen Programmable Thermostat (2H/2C)

Two Heat/Two Cool programmable thermostat with touch screen digital display. Menu-driven programming. Effortless set-up. Program each day separately with no need to copy multiple days. All programming can be done on one screen. Easy to read and use. Large, clear backlit digital display.

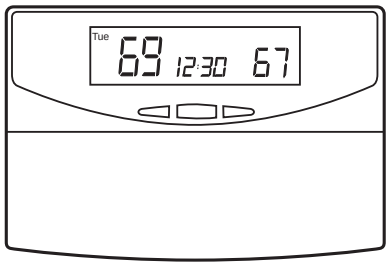
Figure 13.



Digital Display Programmable Thermostat with Built-In Relative Humidity Sensing (3H/2C)

Three Heat/Two Cool digital display thermostat with built-in humidity control and display. This thermostat combines both humidity and dry bulb into one. Fully programmable with night setback.

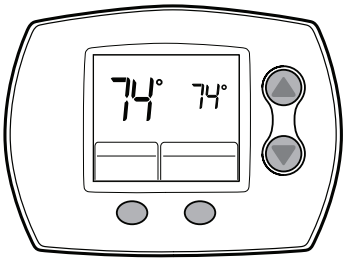
Figure 14.



Digital Display Thermostat (3H/2C)

Three Heat/Two Cool digital display thermostat. Easy access battery replacement. Flip-out door for easy battery replacement without removing or disassembling the thermostat.

Figure 15.



RA Remote Sensor

Return Air Remote Sensor which can be mounted in the return air duct to report return air temperature.

Room Remote Sensor

Space Remote Sensor which can be mounted on the wall to report/control from a remote location in the space.

Outdoor Thermostat

Outdoor thermostat which can be mounted outdoors to turn on the units electric heater at a pre-selected outdoor temperature.

Electrical Data

Table 33. Unit Wiring - Heat Pumps

Tons	Unit Model No.	Unit Operating Voltage Range	Minimum Circuit Ampacity	Maximum Fuse Size or Maximum Circuit Breaker[i]
7½	TWA090A3	187-253	34.5	50
	TWA090A4	414-506	18.1	25
	TWA090AW	518-632	14.5	20
10	TWA120A3	187-253	48.1	70
	TWA120A4	414-506	23.3	35
	TWA120AW	518-632	18.8	25
15	TWA180B3	187-253	62.7	80
	TWA180B4	414-506	32.9	45
	TWA180BW	518-632	26.3	35
20	TWA240B3	187-253	87.8	100
	TWA240B4	414-506	42.5	50
	TWA240BW	518-632	34.2	45

[i] HACR type circuit breaker per NEC.

Table 34. Electrical Characteristics - Compressor and Condenser Fan Motors - 60 Cycle - Heat Pumps

		Compressor Fan Motor					Condenser Fan Motor				
					Amps					Amps	
Tons	Unit Model No.	No.	Volts	Phase	FLA (ea.)	LRA (ea.)	No.	Volts	Phase	FLA (ea.)	LRA (ea.)
7½	TWA090A3	1	208-230	3	25.1	182	1	208-230	1	3.1	8.1
	TWA090A4	1	460	3	13.2	94.9	1	460	1	1.6	3.7
	TWA090AW	1	575	3	10.6	70	1	575	1	1.2	3
10	TWA120A3	1	208-230	3	33.7	278	1	208-230	1	6	17
	TWA120A4	1	460	3	16.5	124	1	460	1	2.7	7
	TWA120AW	1	575	3	13.4	92	1	575	1	2	5.7
15	TWA180B3	2	208-230	3	25.1	182	2	208-230	1	3.1	8.1
	TWA180B4	2	460	3	13.2	94.9	2	460	1	1.6	3.7
	TWA180BW	2	575	3	10.6	70	2	575	1	1.2	3
20	TWA240B3	2	208-230	3	33.7	278	2	208-230	1	6	17
	TWA240B4	2	460	3	16.5	124	2	460	1	2.7	7
	TWA240BW	2	575	3	13.4	92	2	575	1	2	5.7

5-20 Tons, Air Handler Unit Wiring, Electrical Characteristics

Table 35. Unit Wiring - Air Handler

Tons	Unit Model Number	Unit Operating Voltage Range	Minimum Circuit Ampacity	Maximum Fuse or HACR Circuit Breaker Size(i)
5	TWE060A1,B1	187-253	7	15
	TWE060A3,B3	187-253	4	15
	TWE060A4,B4	414-506	2	15
	TWE060AW	518-632	2	15
7½	TWE090A1, B1	187-253	8	15
	TWE090A3, B3(ii)	187-253	7	15
	TWE090A3, B3(iii)	414-506	4	15
	TWE090AW	518-632	4	15
10	TWE120A1,B1	187-253	11	15
	TWE120A3,B3(ii)	187-253	8	15
	TWE120A3,B3(iii)	414-506	5	15
	TWE120AW,BW	518-632	4	15
15	TWE180B3	187-253	12	20
	TWE180B4	414-506	6	15
	TWE180BW	518-632	5	15
20	TWE240B3, E3	187-253	19	25
	TWE240B4, E4	414-506	9	15
	TWE240BW, EW	518-632	7	15

(i) HACR type circuit breaker per NEC.
(ii) When wired for 208-230 volt.
(iii) When wired for 460 volt.

Table 36. Electrical Characteristics - Motors - 60Hz Air Handler

		Standard Evaporator Fan Motor					Oversized Evaporator Fan Motor				
					Amps					Amps	
Tons	Unit Model Number	No.	Volts	Phase	FLA	LRA	No.	Volts	Phase	FLA	LRA
5	TWE060A1, B1	1	208-230	1	5.6	45	1	208-230	1	6.3	45
	TWE060A3, B3	1	208-230	3	2.6	16.4	1	208-230	3	3.6	22
	TWE060A4, B4	1	460	3	1.3	8.2	1	460	3	1.8	11
	TWE060AK	1	380	3	1.4	9.9	-	-	-	-	-
	TWE060AW	1	575	3	1.3	6.6	1	575	3	1.7	10.8
7½	TWE090A1, B1	1	208-230	1	6.2	33	1	208-230	1	7.7	57.4
	TWE090A3, B3(i)	1	208-230/460	3	5.0/2.5	34.3/17.0	1	208-230/460	3	6.0/3.4	49.0/27.5
	TWE090AK	1	380	3	2.5	23.8	-	-	-	-	-
	TWE090AW	1	575	3	3.1	15	1	575	3	2.6	17.5
10	TWE120A1,B1	1	208-230	1	8.3	57.4	1	208-230	1	-	-
	TWE120A3,B3(i)	1	208-230/460	3	6.0/3.4	49.0/27.5	1	208-230/460	3	9.4/4.6	74.9/39.3
	TWE120AK,BK	1	380	3	3.0	30.9	-	-	-	-	-
	TWE120AW,BW	1	575	3	2.6	17.5	1	575	3	5.4	37.3
15	TWE180B3	1	208-230	3	9.4	74.9	1	208-230	3	14.4	98
	TWE180B4	1	460	3	4.6	39.3	1	460	3	6.7	47
	TWE180BK	1	380	3	7.3	54.5	-	-	-	-	-
	TWE180BW	1	575	3	3.4	24.6	1	575	3	5.4	37.3
20	TWE240B3, E3	1	208-230	3	14.5	98	1	208-230	3	18	122.8
	TWE240B4, E4	1	460	3	6.7	47	1	460	3	9	61.4
	TWE240BK	1	380	3	10.0	53.9	-	-	-	-	-
	TWE240BW, EW	1	575	3	5.4	37.3	1	575	3	7.2	49.8

(i) Ships wired for 208-230/3/60. Field convertible to 460/3/60.

Table 37. Unit Wiring with Electric Heat (Single Point Connection) - 5, 7½ and 10 Ton Air Handlers

Heater Model No.	Maximum Fuse Heater KW Rating[i]	To Use With Unit	Unit Power Supply	Control Stages	Minimum Circuit Ampacity[ii]	Maximum Fuse or HACR Circuit Breaker Size[ii], [iii]
BAYHTRL106A	4.33/5.76			1	33/37	35/40
BAYHTRL112A	8.65/11.52	TWE060A1	208-230/1/60	1	59/67	60/70
BAYHTRL117A	12.98/17.28	TWE060B1		1	88/97	90/100
BAYHTRL123A	17.30/23.04			2	111/127[iv]	125/150
BAYHTRL106A	4.33/5.76			1	34/38	35/40
BAYHTRL112A	8.65/11.52			1	60/68[iv]	60/70
BAYHTRL117A	12.98/17.28	TWE090A1	208-230/1/60	1	86/98	90/100
BAYHTRL123A	17.30/23.04	TWE090B1		2	112/128[iv]	125/150
BAYHTRL129A	21.65/28.80			2	138/158[iv]	150/175
BAYHTRL106A	4.33/5.76			1	31/41	40/45
BAYHTRL112A	8.65/11.52			1	63/73[iv]	70/80
BAYHTRL117A	12.98/17.28	TWE120A1	208-230/1/60	1	89/101	90/110
BAYHTRL123A	17.30/23.08	TWE120B1		2	115/131[iv]	125/150
BAYHTRL129A	21.65/28.80			2	141/161[iv]	150/175
BAYHTRL305A	3.75/5.00			1	17/19	20/20
BAYHTRL310A	7.45/9.96	TWE060A3	208-230/3/60	1	30/34	30/35
BAYHTRL315A	11.25/14.96	TWE060B3		1	43/49	45/50
BAYHTRL325A	18.71/24.92			2	69/79[iv]	70/80
BAYHTRL305A	3.75/5.00			1	20/22	20/25
BAYHTRL310A	7.45/9.96			1	33/37	35/40
BAYHTRL315A	11.25/14.96	TWE090A3	208-230/3/60	1	46/52	50/60
BAYHTRL325A	18.71/24.92	TWE090B3		2	72/82[iv]	80/90
BAYHTRL335A	26.20/34.88			2	97/112[v]	100/125
BAYHTRL305A	3.75/5.00			1	21/23	25/25
BAYHTRL310A	7.45/9.96			1	34/38	35/40
BAYHTRL315A	11.25/14.96	TWE120A3	208-230/3/60	1	47/53	50/60
BAYHTRL325A	18.71/24.92	TWE120B3		2	73/83[iv]	80/90
BAYHTRL335A	26.20/34.88			2	98/1134[v]	100/125
BAYHTRL405A	5			1	10	15
BAYHTRL410A	9.96	TWE060A4	460/3/60	1	17	20
BAYHTRL415A	14.96	TWE060B4		1	25	25
BAYHTRL425A	24.92			2	40	40
BAYHTRL405A	5			1	11	15
BAYHTRL410A	9.96			1	19	20
BAYHTRL415A	14.96	TWE090A3[vi]	460/3/60	1	26	30
BAYHTRL425A	24.92	TWE090B3[vi]		2	41	45
BAYHTRL435A	34.88			2	56	60
BAYHTRL405A	5			1	12	15
BAYHTRL410A	9.96			1	20	20
BAYHTRL415A	14.96	TWE120A3[vi]	460/3/60	1	27	30
BAYHTRL425A	24.92	TWE120B3[vi]		2	42	45
BAYHTRL435A	34.88			2	57	60
BAYHTRLW05A	5			1	8	15
BAYHTRLW10A	9.96			1	15	15
BAYHTRLW15A	14.96	TWE060AW	575/3/60	1	21	25
BAYHTRLW25A	24.92			2	33	35
BAYHTRLW05A	5			1	11	15
BAYHTRLW10A	9.96			1	17	20
BAYHTRLW15A	14.96	TWE090AW	575/3/60	1	23	25
BAYHTRLW25A	24.92			2	36	40
BAYHTRLW35A	34.88			2	48	50

Unit Wiring with Electric Heat

Table 37. Unit Wiring with Electric Heat (Single Point Connection) - 5, 7½ and 10 Ton Air Handlers

Heater Model No.	Maximum Fuse Heater KW Rating[i]	To Use With Unit	Unit Power Supply	Control Stages	Minimum Circuit Ampacity[ii]	Maximum Fuse or HACR Circuit Breaker Size[ii], [iii]
BAYHTRLW05A	5			1	10	15
BAYHTRLW10A	9.96			1	16	20
BAYHTRLW15A	14.96	TWE120AW	575/3/60	1	22	25
BAYHTRLW25A	24.92	TWE120BW		2	35	35
BAYHTRLW35A	34.88			2	47	50

(i) kW ratings are at: 208/240V for 208-230V air handlers.
480V for 460V air handlers
600V for 575V air handlers
For other than rated voltage, capacity = (Voltage/Rated Voltage)2 x Rated Capacity.
(ii) Any power supply and circuits must be wired and protected in accordance with local codes.
(iii) The HACR circuit breaker is for U.S.A. installations only.
(iv) Field wire must be rated at least 75 C.
(v) Field wire must be rated at least 90 C.
(vi) With motor field converted to 460V.

Table 38. Unit Wiring with Electric Heat (Single Point Connection) - 15 and 20 Ton Air Handlers

Heater Model No.	Heater KW Rating[i]	To Use With Unit	Unit Power Supply	Control Stages	Minimum Circuit Ampacity[ii]	Maximum Fuse or HACR Circuit Breaker Size[ii][iii]
BAYHTRM310A	7.50/10.00			1	38/42	40/45
BAYHTRM320A	14.96/19.92			1	64/72	70/80
BAYHTRM330A	22.50/29.92	TWE180B3	208-230/3/60	2	90/102	90/110
BAYHTRM350A	37.42/49.84			2	142/162[iv]	150/175
BAYHTRM310A	7.50/10.00			1	45/49	50/50
BAYHTRM320A	14.96/19.92			1	71/79	80/80
BAYHTRM330A	22.50/29.92	TWE240B3, E3	208-230/3/60	2	97/109	100/110
BAYHTRM350A	37.42/49.84			2	144/169[iv]	150/175
BAYHTRM410A	10			1	21	25
BAYHTRM420A	19.92			1	36	40
BAYHTRM430A	29.92	TWE180B4	460/3/60	2	51	60
BAYHTRM450A	49.84			2	81	90
BAYHTRM410A	10			1	24	25
BAYHTRM420A	19.92			1	34	40
BAYHTRM430A	29.92	TWE240B4, E4	460/3/60	2	54	60
BAYHTRM450A	49.84			2	84	90
BAYHTRMW10A	10			1	17	20
BAYHTRMW20A	19.92			1	30	30
BAYHTRMW30A	29.92	TWE180BW	575/3/60	2	42	45
BAYHTRMW50A	49.84			2	67	70
BAYHTRMW10A	10			1	20	25
BAYHTRMW20A	19.92			1	32	35
BAYHTRMW30A	29.92	TWE240BW, EW	575/3/60	2	45	50
BAYHTRMW50A	49.84			2	70	80

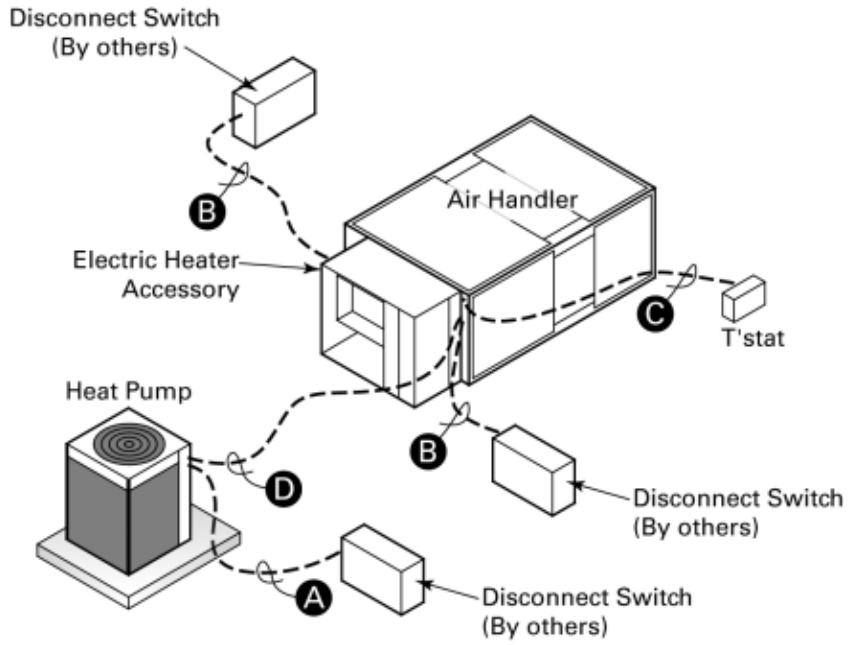
(i) kW ratings are at: 208/240V for 208-230V air handlers.
480V for 460V air handlers
600V for 575V air handlers
For other than rated voltage, capacity = (Voltage/Rated Voltage)^2 x Rated Capacity.
(ii) Any power supply and circuits must be wired and protected in accordance with local codes.
(iii) The HACR circuit breaker is for U.S.A. installations only.
(iv) Field wire must be rated at least 90 C.

Jobsite Connections

Wiring shown with dashed lines is to be furnished and installed by the customer. All customer- supplied wiring must be copper only and must conform to NEC and local electrical codes. Codes may require line of sight between disconnect switch and unit.

Note: *When electric heater accessory is used single point power entry or dual point power entry is field optional. Single point power entry option is through electric heater only.*

Figure 16. Title goes here in this table cell



TWA060/TWE060A

Field Wiring:

A 3 power wires. Line voltage for 3 phase; 2 wires for single phase.

B 3 power wires. Line voltage for 3 phase; 2 wires for single phase

C Heat pump thermostat: 6 wires, 24 volts.
Electric heat: add 2 additional wires, 24 volts.

D 2 wires, 24 volts.
Outdoor thermostat: add 1 additional wire per ODT, 24 volts.
Electric heat: add 1 additional wire, 24 volts.

(2) TW-048/TWE090B
(2) TW-030/TWE060B
(2) TW-060/TWE120B

Field Wiring:

A 3 power wires. Line voltage for 3 phase; 2 wires for single phase.

B 3 power wires. Line voltage for 3 phase; 2 wires for single phase.

C Heat pump thermostat: 7 wires, 24 volts Electric Heat: add 2 additional wires, 24 volts.

D 5 wires, 24 volts to outdoor section "A" 2 wires, 24 volts to outdoor section "B" 2 wires, 24 volts between outdoor sections "A" "B"
Electric heat: add 1 additional wire, 24 volts.
Outdoor thermostat: add 1 additional wire, 24 volt.

TWA090A/TWE090A
TWA120A/TWE120A

Field Wiring:

A 3 power wires, line voltage.

B 3 power wires, line voltage for 3 phase; 2 wires for single phase.

C Heat pump thermostat: 6 wires, 24 volts.
Electric heat: add 2 additional wires, 24 volts.

D 6 wires, 24 volts.
Outdoor thermostat: add 1additional wire, 24 volts.
Electric heat: add 1 additional wire, 24 volts.

(2) TWA090A/TWE180B
(2) TWA120A/TWE240B

Field Wiring:

A 3 power wires, line voltage.

B 3 power wires, line voltage.

C Heat pump thermostat: 7 wires, 24 volts.
Electric heat: add 2 additional wires, 24 volts.

D 9 wires, 24 volts.
Electric heat: add 4 additional wires, 24 volts.
Outdoor thermostat: add 3 additional wires, 24 volts.

TWA180B/TWE180B
TWA240B/TWE240B

Field Wiring:

A 3 power wires, line voltage.

B 3 power wires, line voltage.

C Heat pump thermostat: 7 wires, 24 volts.
Electric heat: add 2 additional wires, 24 volts.

D 7 wires, 24 volts.
Electric heat: add 4 additional wires, 24 volts.
Outdoor thermostat: add 1 additional wire, 24 volts.

Typical Wiring

Figure 17. Heat Pump - Single Compressor. For specific wiring, see individual Service Facts.

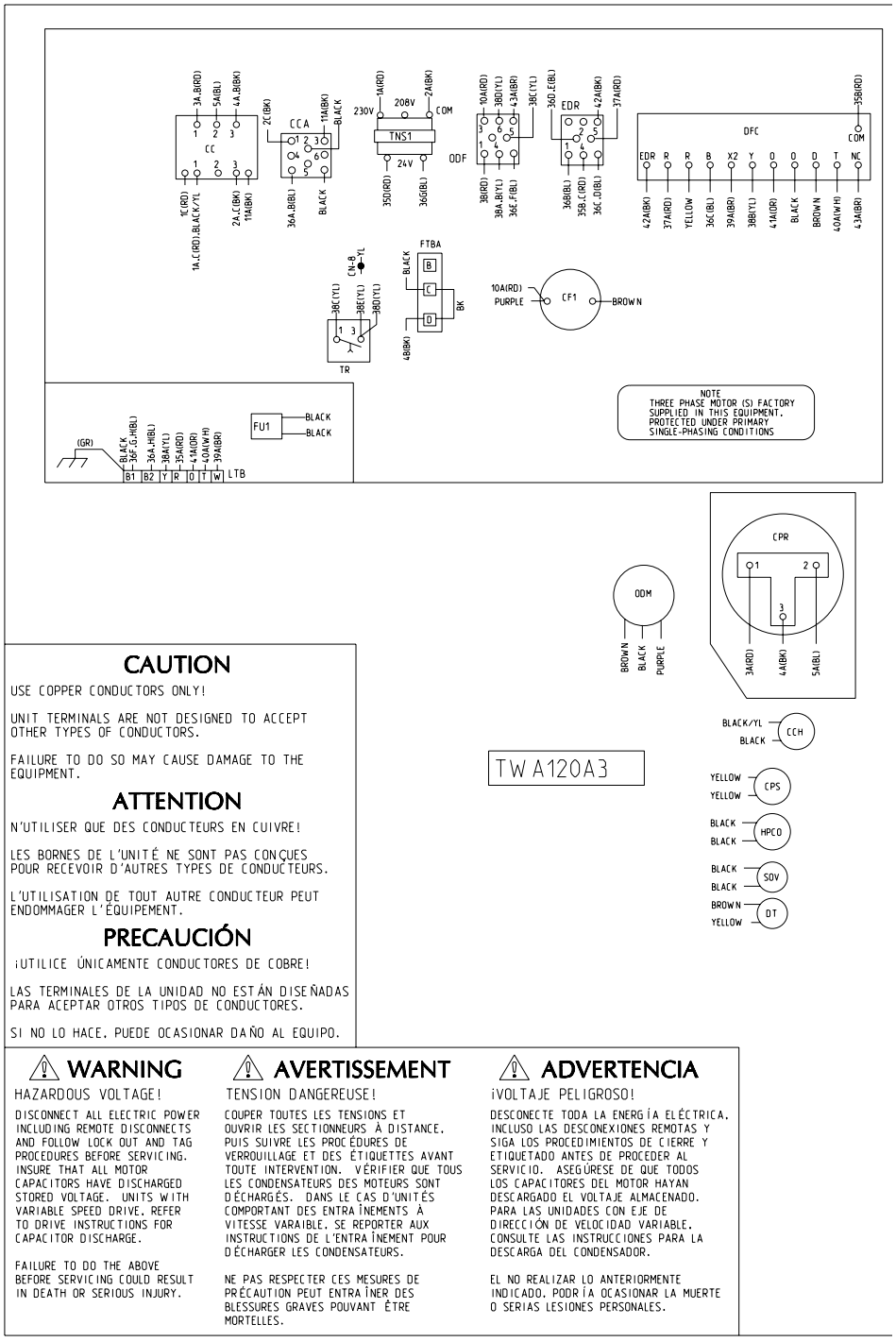
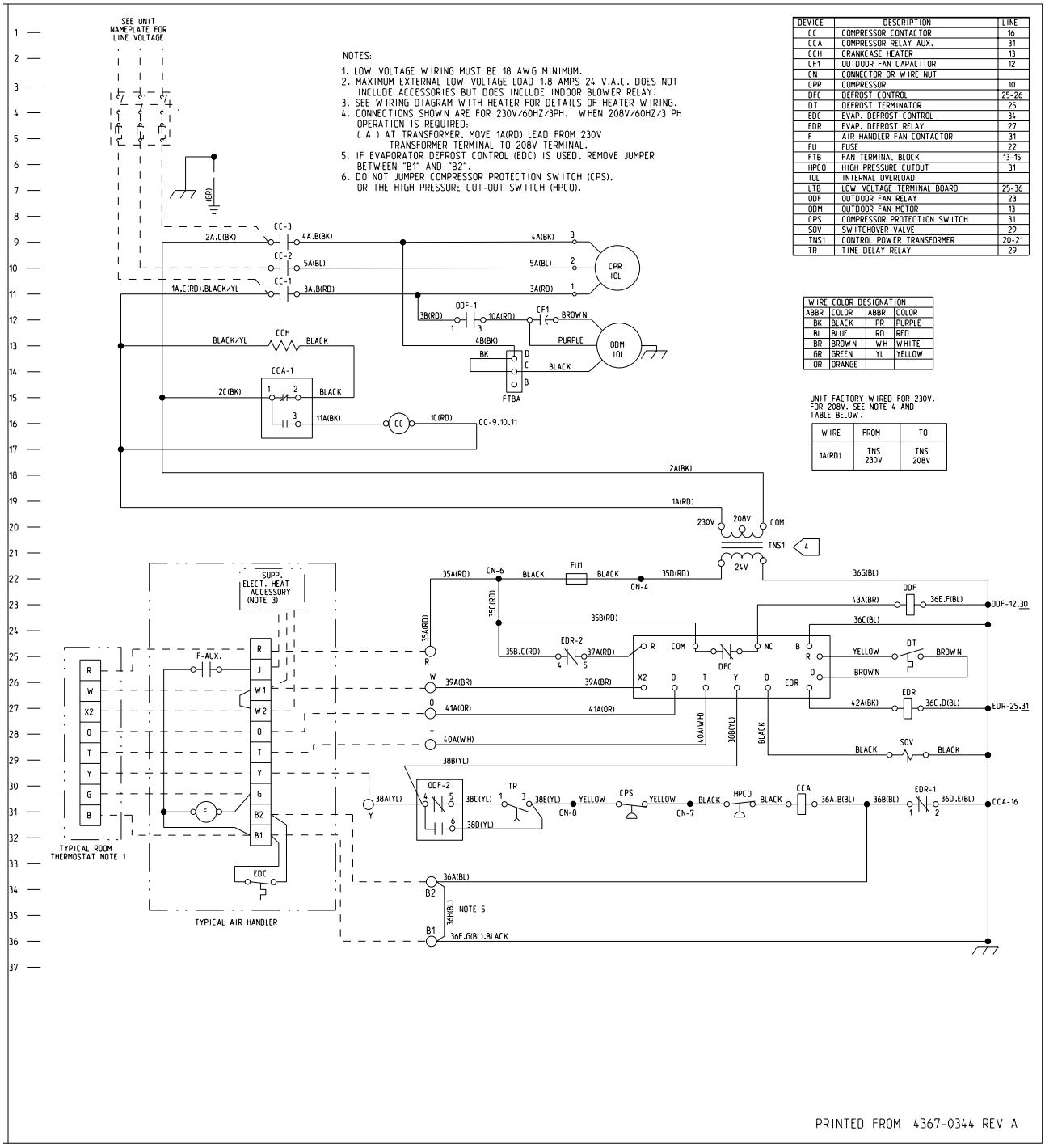

CC
CCA
TNS1
ODF
EDR
DFC
TR
FTBA
CF1
FU1
LTB
NOTE
THREE PHASE MOTOR (S) FACTORY SUPPLIED IN THIS EQUIPMENT. PROTECTED UNDER PRIMARY SINGLE-PHASING CONDITIONS
ODM
CPR
CCH
CPS
HPCO
SDV
DT
TW A120A3
CAUTION
USE COPPER CONDUCTORS ONLY!
UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS.
FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.
ATTENTION
N'UTILISER QUE DES CONDUCTEURS EN CUIVRE!
LES BORNES DE L'UNITÉ NE SONT PAS CONÇUES POUR RECEVOIR D'AUTRES TYPES DE CONDUCTEURS.
L'UTILISATION DE TOUT AUTRE CONDUCTEUR PEUT ENDOMMAGER L'ÉQUIPEMENT.
PRECAUCIÓN
¡UTILICE ÚNICAMENTE CONDUCTORES DE COBRE!
LAS TERMINALES DE LA UNIDAD NO ESTÁN DISEÑADAS PARA ACEPTAR OTROS TIPOS DE CONDUCTORES.
SI NO LO HACE, PUEDE OCASIONAR DAÑO AL EQUIPO.
WARNING
HAZARDOUS VOLTAGE!
DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS AND FOLLOW LOCK OUT AND TAG PROCEDURES BEFORE SERVICING. INSURE THAT ALL MOTOR CAPACITORS HAVE DISCHARGED STORED VOLTAGE. UNITS WITH VARIABLE SPEED DRIVE, REFER TO DRIVE INSTRUCTIONS FOR CAPACITOR DISCHARGE.
FAILURE TO DO THE ABOVE BEFORE SERVICING COULD RESULT IN DEATH OR SERIOUS INJURY.
AVERTISSEMENT
TENSION DANGEREUSE!
COUPER TOUTES LES TENSIONS ET OUVRIR LES SECTIONNEURS À DISTANCE. PUIS SUIVRE LES PROCÉDURES DE VERROUILLAGE ET DES ÉTIQUETTES AVANT TOUTE INTERVENTION. VÉRIFIER QUE TOUS LES CONDENSATEURS DES MOTEURS SONT DÉCHARGÉS. DANS LE CAS D'UNITÉS COMPORTANT DES ENTRAÎNEMENTS À VITESSE VARAIBLE, SE REPORTER AUX INSTRUCTIONS DE L'ENTRAÎNEMENT POUR DÉCHARGER LES CONDENSATEURS.
NE PAS RESPECTER CES MESURES DE PRÉCAUTION PEUT ENTRAÎNER DES BLESSURES GRAVES POUVANT ÊTRE MORTELLES.
ADVERTENCIA
¡VOLTAJE PELIGROSO!
DESCONECTE TODA LA ENERGÍA ELÉCTRICA, INCLUSO LAS DESCONEXIONES REMOTAS Y SIGA LOS PROCEDIMIENTOS DE CIERRE Y ETIQUETADO ANTES DE PROCEDER AL SERVICIO. ASEGÚRESE DE QUE TODOS LOS CAPACITORES DEL MOTOR HAYAN DESCARGADO EL VOLTAJE ALMACENADO. PARA LAS UNIDADES CON EJE DE DIRECCIÓN DE VELOCIDAD VARIABLE, CONSULTE LAS INSTRUCCIONES PARA LA DESCARGA DEL CONDENSADOR.
EL NO REALIZAR LO ANTERIORMENTE INDICADO, PODRÍA OCASIONAR LA MUERTE O SERIAS LESIONES PERSONALES.

Figure 17. (continued from previous page)Heat Pump - Single Compressor. For specific wiring, see individual Service Facts.



Heat Pump Dual Compressor Wiring Diagram

Figure 18. Heat Pump - Dual Compressor. For specific wiring, see individual Service Facts.

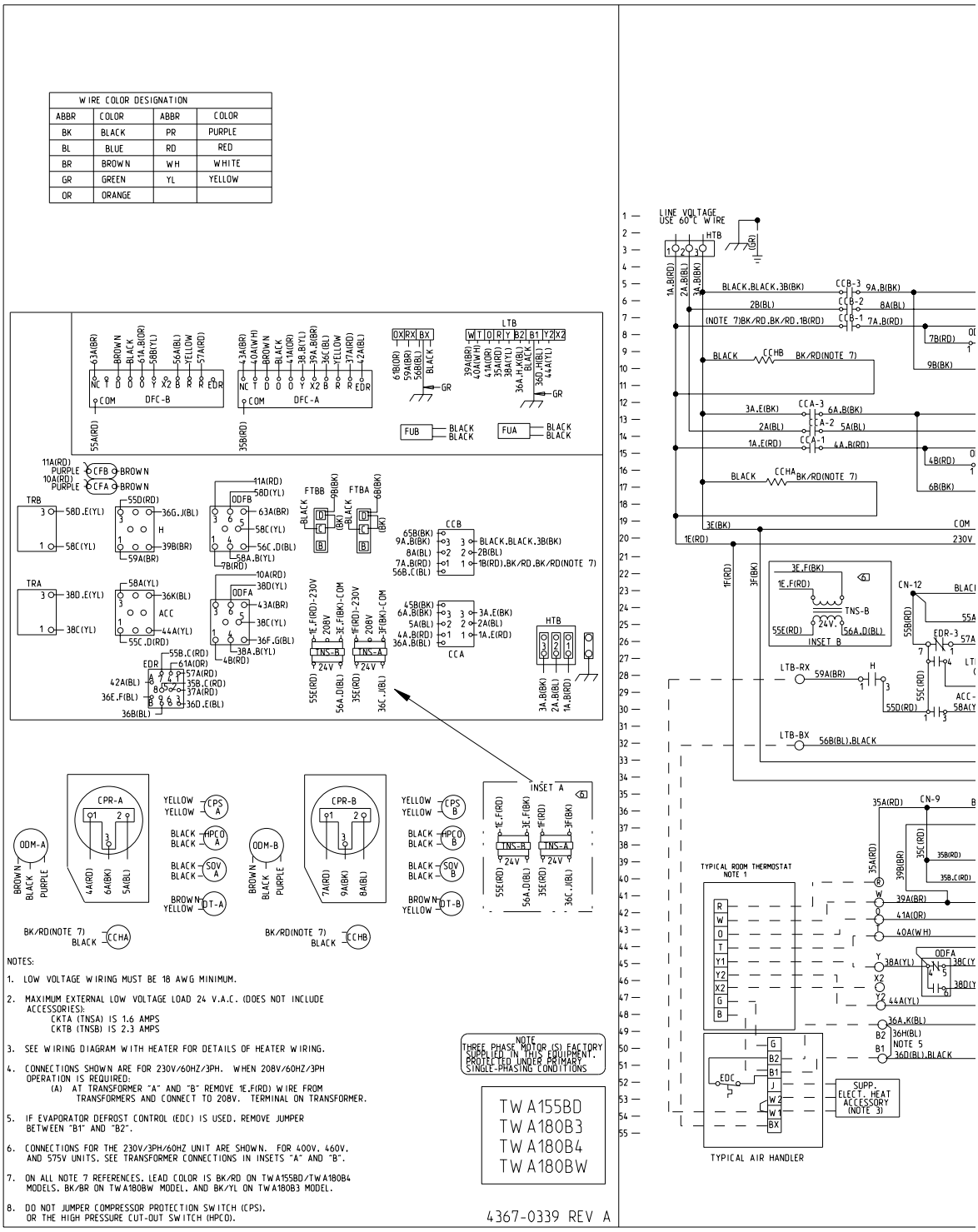
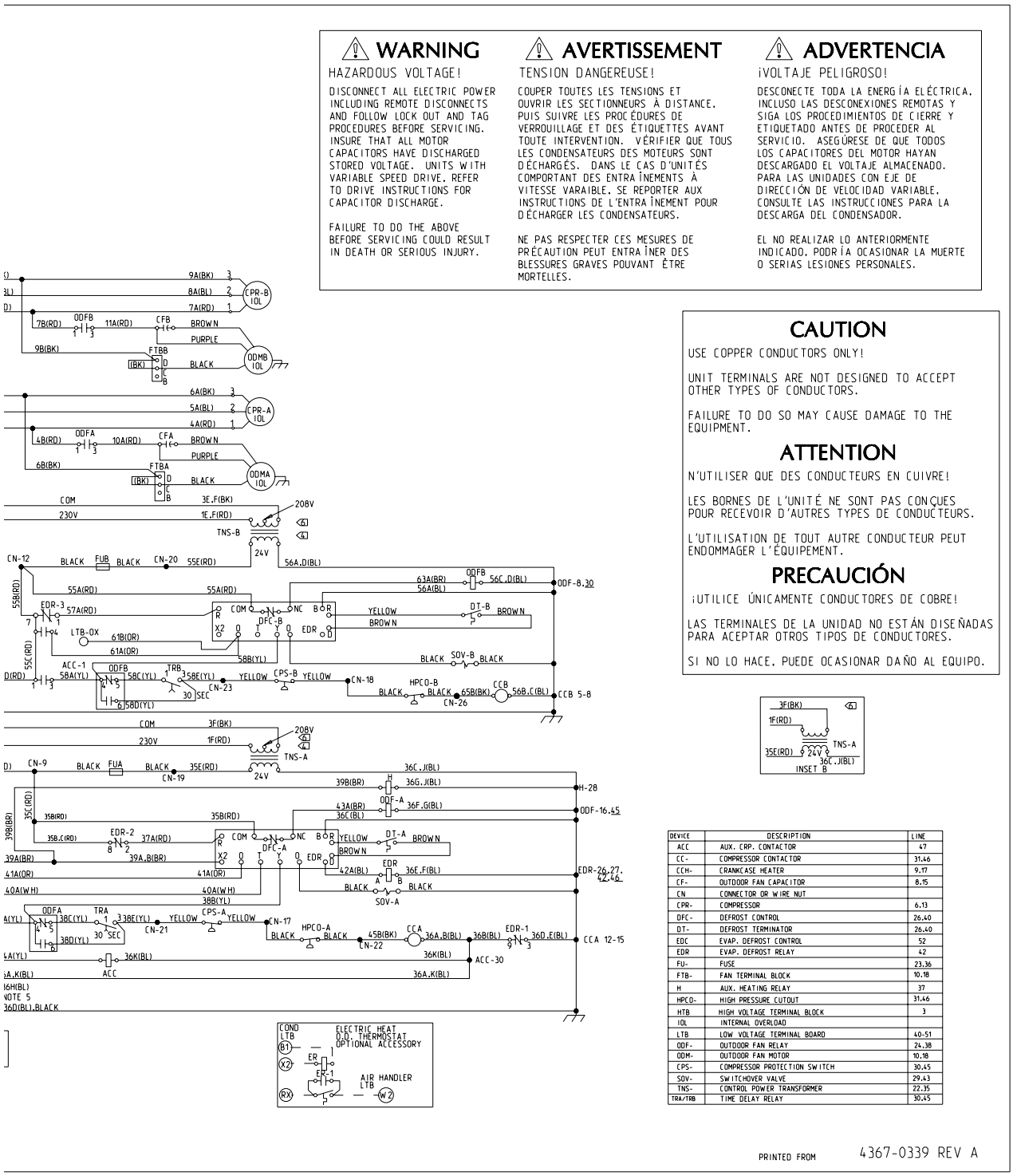


Figure 18. (continued from previous page)Heat Pump - Dual Compressor. For specific wiring, see individual Service Facts.

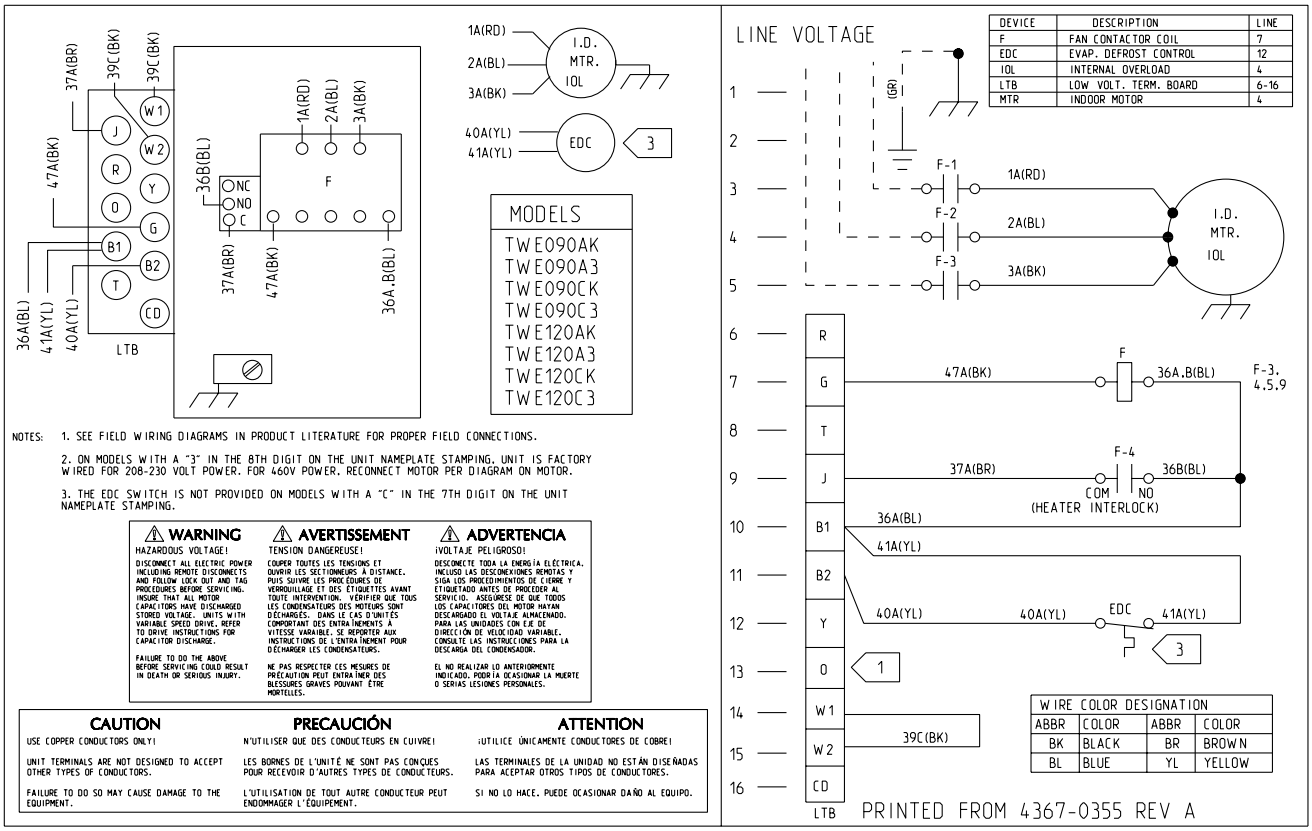

⚠ WARNING
HAZARDOUS VOLTAGE!
DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS AND FOLLOW LOCK OUT AND TAG PROCEDURES BEFORE SERVICING. INSURE THAT ALL MOTOR CAPACITORS HAVE DISCHARGED STORED VOLTAGE. UNITS WITH VARIABLE SPEED DRIVE, REFER TO DRIVE INSTRUCTIONS FOR CAPACITOR DISCHARGE.
FAILURE TO DO THE ABOVE BEFORE SERVICING COULD RESULT IN DEATH OR SERIOUS INJURY.
⚠ AVERTISSEMENT
TENSION DANGEREUSE!
COUPER TOUTES LES TENSIONS ET OUVRIR LES SECTIONNEURS À DISTANCE. PUIS SUIVRE LES PROCÉDURES DE VERROUILLAGE ET DES ÉTIQUETTES AVANT TOUTE INTERVENTION. VÉRIFIER QUE TOUS LES CONDENSATEURS DES MOTEURS SONT DÉCHARGÉS. DANS LE CAS D'UNITÉS COMPORTANT DES ENTRAÎNEMENTS À VITESSE VARAIBLE, SE REPORTER AUX INSTRUCTIONS DE L'ENTRAÎNEMENT POUR DÉCHARGER LES CONDENSATEURS.
NE PAS RESPECTER CES MESURES DE PRÉCAUTION PEUT ENTRAÎNER DES BLESSURES GRAVES POUVANT ÊTRE MORTELLES.
⚠ ADVERTENCIA
¡VOLTAJE PELIGROSO!
DESCONECTE TODA LA ENERGÍA ELÉCTRICA, INCLUSO LAS DESCONEXIONES REMOTAS Y SIGA LOS PROCEDIMIENTOS DE CIERRE Y ETIQUETADO ANTES DE PROCEDER AL SERVICIO. ASEGÚRESE DE QUE TODOS LOS CAPACITORES DEL MOTOR HAYAN DESCARGADO EL VOLTAJE ALMACENADO. PARA LAS UNIDADES CON EJE DE DIRECCIÓN DE VELOCIDAD VARIABLE, CONSULTE LAS INSTRUCCIONES PARA LA DESCARGA DEL CONDENSADOR.
EL NO REALIZAR LO ANTERIORMENTE INDICADO, PODRÍA OCASIONAR LA MUERTE O SERIAS LESIONES PERSONALES.
CAUTION
USE COPPER CONDUCTORS ONLY!
UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS.
FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.
ATTENTION
N'UTILISER QUE DES CONDUCTEURS EN CUIVRE!
LES BORNES DE L'UNITÉ NE SONT PAS CONÇUES POUR RECEVOIR D'AUTRES TYPES DE CONDUCTEURS.
L'UTILISATION DE TOUT AUTRE CONDUCTEUR PEUT ENDOMMAGER L'ÉQUIPEMENT.
PRECAUCIÓN
¡UTILICE ÚNICAMENTE CONDUCTORES DE COBRE!
LAS TERMINALES DE LA UNIDAD NO ESTÁN DISEÑADAS PARA ACEPTAR OTROS TIPOS DE CONDUCTORES.
SI NO LO HACE, PUEDE OCASIONAR DAÑO AL EQUIPO.
CPR-B 1OL
CPR-A 1OL
ODMB 1OL
ODMA 1OL
208V
230V
TNS-B
TNS-A
24V
CN-12
CN-20
CN-9
CN-19
CN-18
CN-23
CN-26
CN-21
CN-17
CN-22
ACC
ACC-30
EDR-3
EDR-2
EDR-1
DFC-B
DFC-A
DT-B
DT-A
SOV-B
SOV-A
HPCO-B
HPCO-A
CCB
CCA
TRB
TRA
CPS-B
CPS-A
30 SEC
ODF-8.30
ODF-16.45
EDR-26.27.42.46
H-28
CCB 5-8
CCA 12-15
INSET B
COND LTB
ELECTRIC HEAT O.D. THERMOSTAT OPTIONAL ACCESSORY
AIR HANDLER LTB
PRINTED FROM 4367-0339 REV A

DEVICE	DESCRIPTION	LINE
ACC	AUX. CRP. CONTACTOR	47
CC-	COMPRESSOR CONTACTOR	31,46
CCH-	CRANKCASE HEATER	9,17
CF-	OUTDOOR FAN CAPACITOR	8,15
CN	CONNECTOR OR WIRE NUT	
CPR-	COMPRESSOR	6,13
DFC-	DEFROST CONTROL	26,40
DT-	DEFROST TERMINATOR	26,40
EDC	EVAP. DEFROST CONTROL	52
EDR	EVAP. DEFROST RELAY	42
FU-	FUSE	23,36
FTB-	FAN TERMINAL BLOCK	10,18
H	AUX. HEATING RELAY	37
HPCO-	HIGH PRESSURE CUTOUT	31,46
HTB	HIGH VOLTAGE TERMINAL BLOCK	3
IOL	INTERNAL OVERLOAD	
LTB	LOW VOLTAGE TERMINAL BOARD	40-51
ODF-	OUTDOOR FAN RELAY	24,38
ODM-	OUTDOOR FAN MOTOR	10,18
CPS-	COMPRESSOR PROTECTION SWITCH	30,45
SOV-	SWITCHOVER VALVE	29,43
TNS-	CONTROL POWER TRANSFORMER	22,35
TRA/TRB	TIME DELAY RELAY	30,45

Typical Wiring

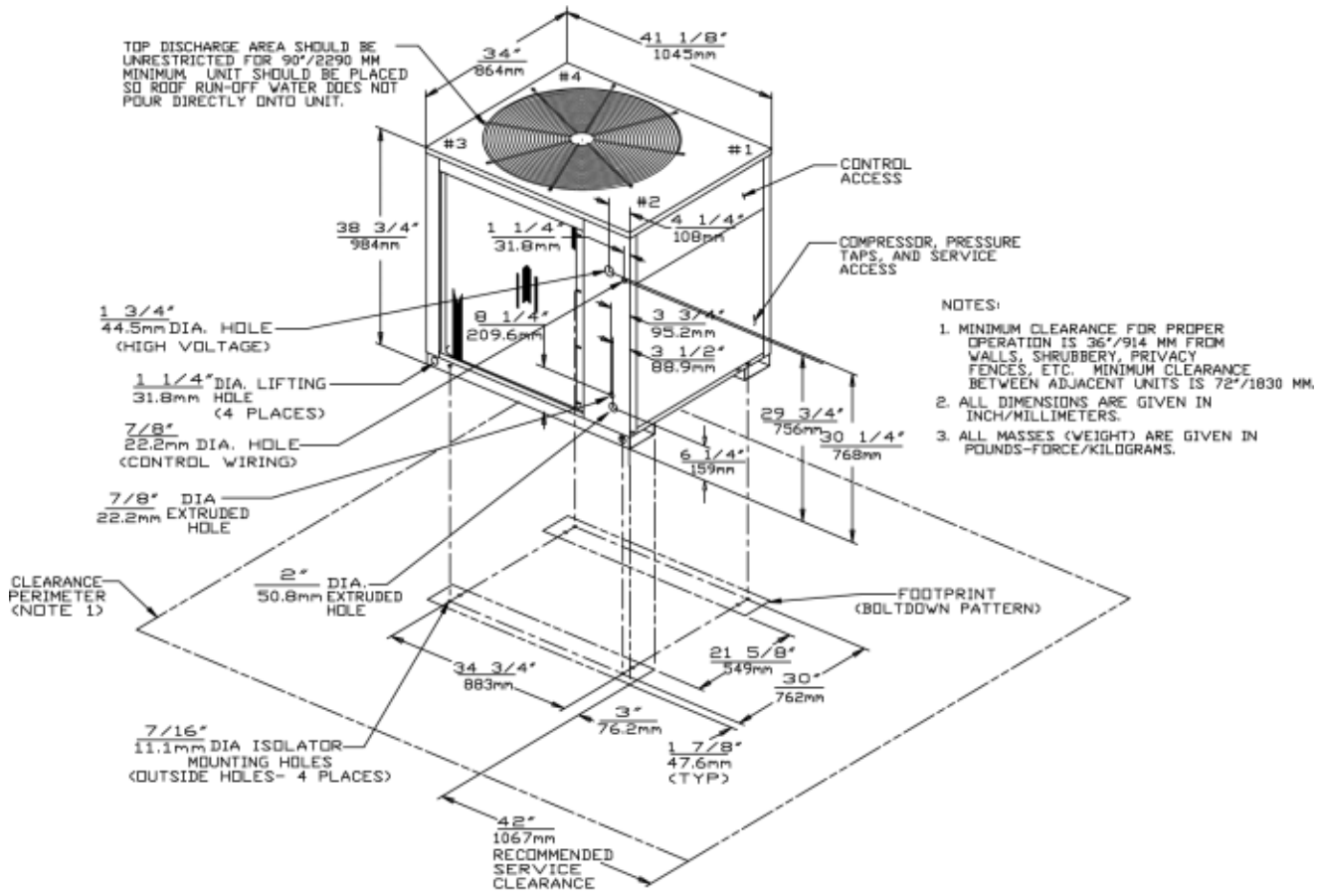
Air Handler Wiring Diagram

Figure 19. Air Handler. For specific wiring, see individual Service Facts.


LINE VOLTAGE
DEVICE | DESCRIPTION | LINE
F | FAN CONTACTOR COIL | 7
EDC | EVAP. DEFROST CONTROL | 12
IOL | INTERNAL OVERLOAD | 4
LTB | LOW VOLT. TERM. BOARD | 6-16
MTR | INDOOR MOTOR | 4
MODELS
TWE090AK
TWE090A3
TWE090CK
TWE090C3
TWE120AK
TWE120A3
TWE120CK
TWE120C3
NOTES: 1. SEE FIELD WIRING DIAGRAMS IN PRODUCT LITERATURE FOR PROPER FIELD CONNECTIONS.
2. ON MODELS WITH A "3" IN THE 8TH DIGIT ON THE UNIT NAMEPLATE STAMPING, UNIT IS FACTORY WIRED FOR 208-230 VOLT POWER. FOR 460V POWER, RECONNECT MOTOR PER DIAGRAM ON MOTOR.
3. THE EDC SWITCH IS NOT PROVIDED ON MODELS WITH A "C" IN THE 7TH DIGIT ON THE UNIT NAMEPLATE STAMPING.
WARNING
HAZARDOUS VOLTAGE!
AVERTISSEMENT
TENSION DANGEREUSE!
ADVERTENCIA
¡VOLTAJE PELIGROSO!
CAUTION
PRECAUCIÓN
ATTENTION
WIRE COLOR DESIGNATION
ABBR | COLOR | ABBR | COLOR
BK | BLACK | BR | BROWN
BL | BLUE | YL | YELLOW
PRINTED FROM 4367-0355 REV A

Dimensional Data

Figure 20. 7½ Tons TWA090 Heat Pump. All dimensions are in inches.


TOP DISCHARGE AREA SHOULD BE UNRESTRICTED FOR 90"/2290 MM MINIMUM. UNIT SHOULD BE PLACED SO ROOF RUN-OFF WATER DOES NOT POUR DIRECTLY ONTO UNIT.
34" 864mm
41 1/8" 1045mm
#4
#3
#1
#2
CONTROL ACCESS
38 3/4" 984mm
1 1/4" 31.8mm
4 1/4" 108mm
COMPRESSOR, PRESSURE TAPS, AND SERVICE ACCESS
1 3/4" 44.5mm DIA. HOLE (HIGH VOLTAGE)
8 1/4" 209.6mm
3 3/4" 95.2mm
3 1/2" 88.9mm
1 1/4" 31.8mm DIA. LIFTING HOLE (4 PLACES)
7/8" 22.2mm DIA. HOLE (CONTROL WIRING)
29 3/4" 756mm
30 1/4" 768mm
6 1/4" 159mm
7/8" 22.2mm DIA EXTRUDED HOLE
NOTES:
1. MINIMUM CLEARANCE FOR PROPER OPERATION IS 36"/914 MM FROM WALLS, SHRUBBERY, PRIVACY FENCES, ETC. MINIMUM CLEARANCE BETWEEN ADJACENT UNITS IS 72"/1830 MM.
2. ALL DIMENSIONS ARE GIVEN IN INCH/MILLIMETERS.
3. ALL MASSES (WEIGHT) ARE GIVEN IN POUNDS-FORCE/KILOGRAMS.
CLEARANCE PERIMETER (NOTE 1)
2" 50.8mm DIA. EXTRUDED HOLE
FOOTPRINT (BOLTDOWN PATTERN)
34 3/4" 883mm
21 5/8" 549mm
30" 762mm
3" 76.2mm
7/16" 11.1mm DIA ISOLATOR MOUNTING HOLES (OUTSIDE HOLES- 4 PLACES)
1 7/8" 47.6mm (TYP)
42" 1067mm RECOMMENDED SERVICE CLEARANCE

10 Tons

Figure 21. 10 Tons TWA120A Heat Pump. All dimensions are in inches.

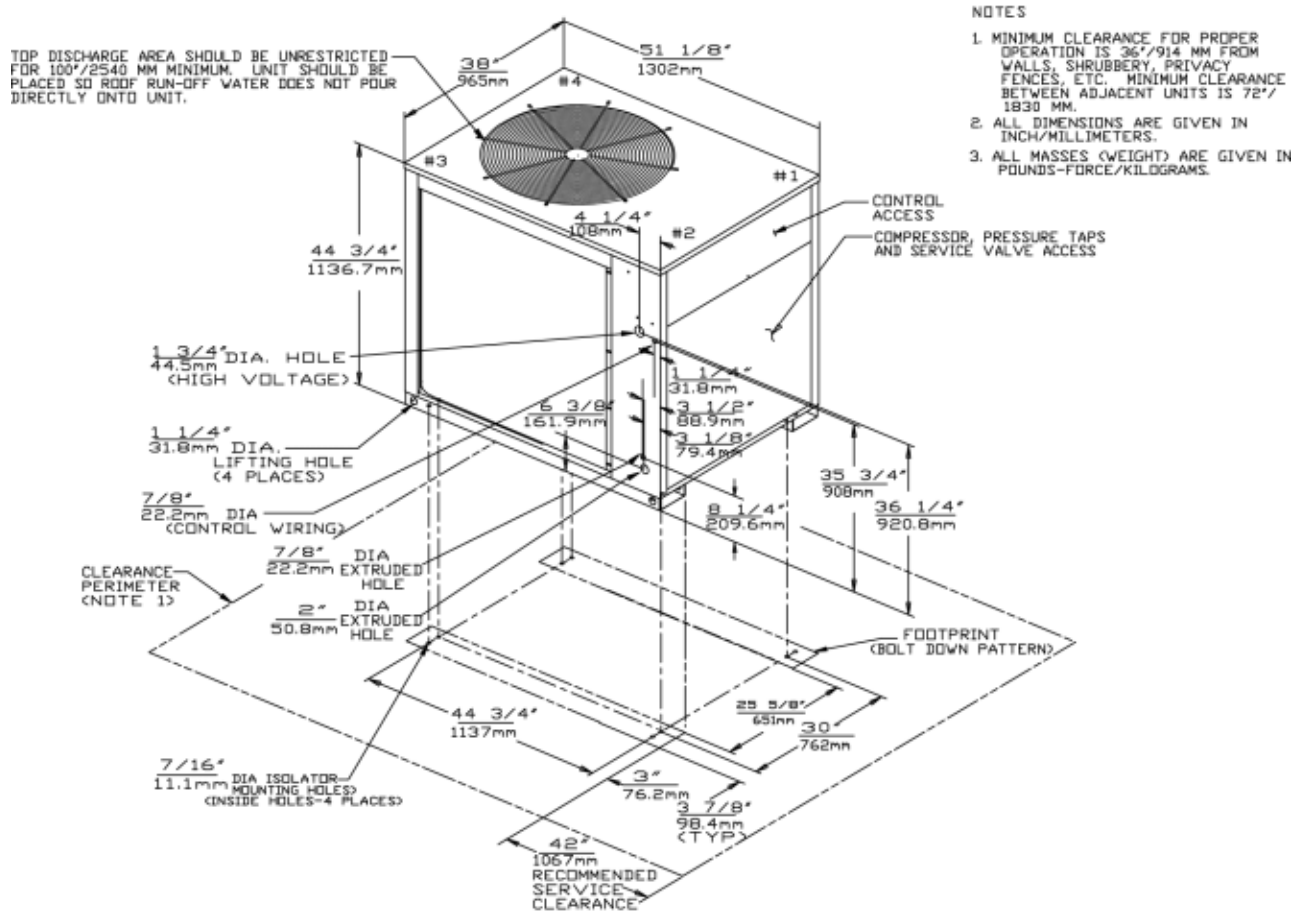
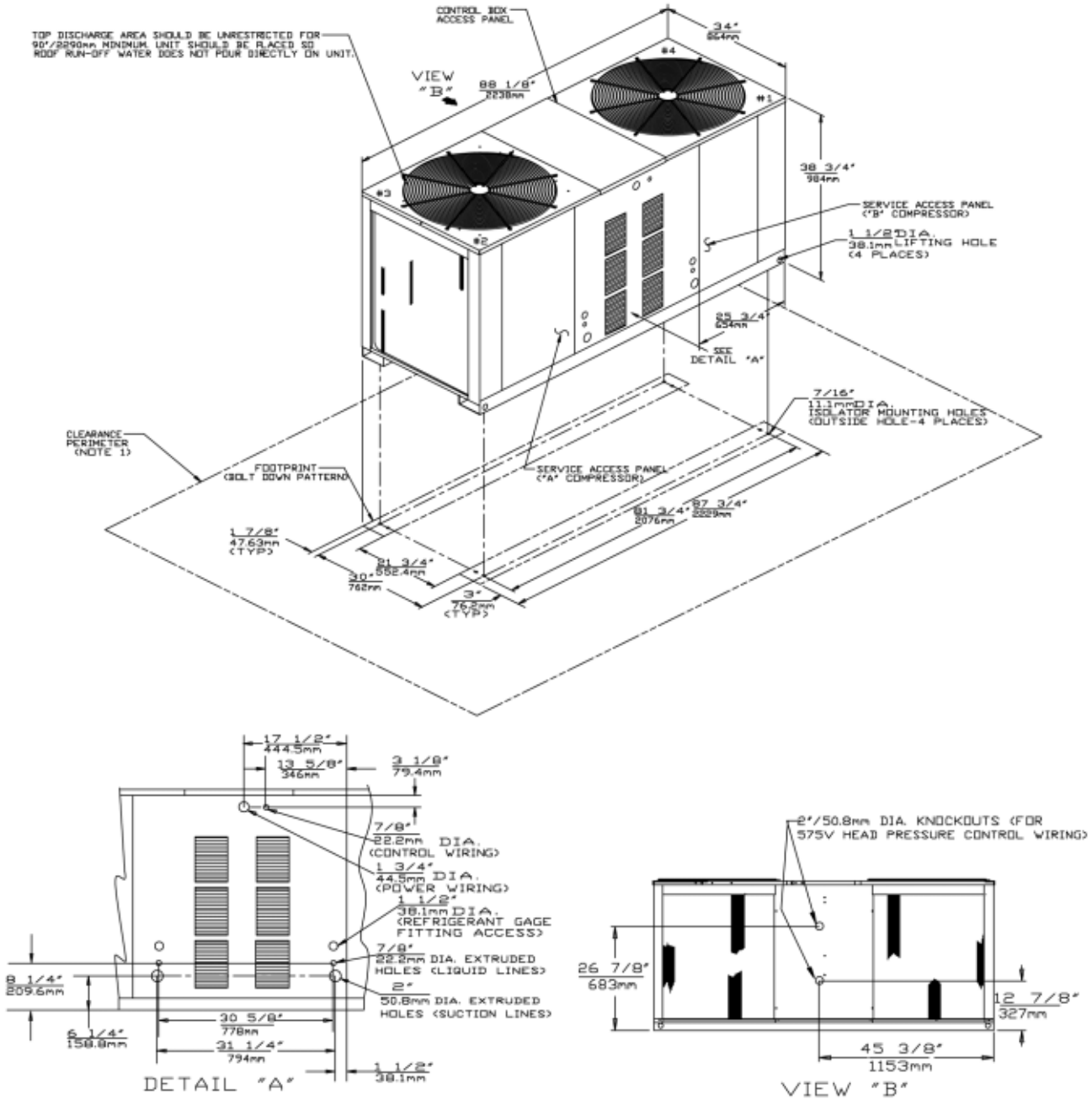

NOTES
1. MINIMUM CLEARANCE FOR PROPER OPERATION IS 36"/914 MM FROM WALLS, SHRUBBERY, PRIVACY FENCES, ETC. MINIMUM CLEARANCE BETWEEN ADJACENT UNITS IS 72"/ 1830 MM.
2. ALL DIMENSIONS ARE GIVEN IN INCH/MILLIMETERS.
3. ALL MASSES (WEIGHT) ARE GIVEN IN POUNDS-FORCE/KILOGRAMS.
TOP DISCHARGE AREA SHOULD BE UNRESTRICTED FOR 100"/2540 MM MINIMUM. UNIT SHOULD BE PLACED SO ROOF RUN-OFF WATER DOES NOT POUR DIRECTLY ONTO UNIT.
38" 965mm
51 1/8" 1302mm
#4
#3
#1
#2
4 1/4" 108mm
CONTROL ACCESS
COMPRESSOR, PRESSURE TAPS AND SERVICE VALVE ACCESS
44 3/4" 1136.7mm
1 3/4" 44.5mm DIA. HOLE (HIGH VOLTAGE)
1 1/4" 31.8mm DIA. LIFTING HOLE (4 PLACES)
7/8" 22.2mm DIA (CONTROL WIRING)
1 1/4" 31.8mm
6 3/8" 161.9mm
3 1/2" 88.9mm
3 1/8" 79.4mm
35 3/4" 908mm
8 1/4" 209.6mm
36 1/4" 920.8mm
7/8" 22.2mm DIA EXTRUDED HOLE
2" 50.8mm DIA EXTRUDED HOLE
CLEARANCE PERIMETER (NOTE 1)
FOOTPRINT (BOLT DOWN PATTERN)
44 3/4" 1137mm
25 5/8" 651mm
30" 762mm
7/16" 11.1mm DIA ISOLATOR MOUNTING HOLES (INSIDE HOLES-4 PLACES)
3" 76.2mm
3 7/8" 98.4mm (TYP)
42" 1067mm RECOMMENDED SERVICE CLEARANCE

Figure 22. 15 Tons TWA180B Heat Pump. All dimensions are in inches.


TOP DISCHARGE AREA SHOULD BE UNRESTRICTED FOR 90"/2290mm MINIMUM. UNIT SHOULD BE PLACED SO ROOF RUN-OFF WATER DOES NOT POUR DIRECTLY ON UNIT.
CONTROL BOX ACCESS PANEL
VIEW "B"
88 1/8" 2238mm
34" 864mm
#4
#1
#3
#2
38 3/4" 984mm
SERVICE ACCESS PANEL ("B" COMPRESSOR)
1 1/2" DIA. 38.1mm LIFTING HOLE (4 PLACES)
25 3/4" 654mm
SEE DETAIL "A"
7/16" 11.1mm DIA. ISOLATOR MOUNTING HOLES (OUTSIDE HOLE-4 PLACES)
CLEARANCE PERIMETER (NOTE 1)
FOOTPRINT (BOLT DOWN PATTERN)
SERVICE ACCESS PANEL ("A" COMPRESSOR)
81 3/4" 2076mm
87 3/4" 2229mm
1 7/8" 47.63mm (TYP)
21 3/4" 552.4mm
30" 762mm
3" 76.2mm (TYP)
17 1/2" 444.5mm
13 5/8" 346mm
3 1/8" 79.4mm
7/8" 22.2mm DIA. (CONTROL WIRING)
1 3/4" 44.5mm DIA. (POWER WIRING)
1 1/2" 38.1mm DIA. (REFRIGERANT GAGE FITTING ACCESS)
7/8" 22.2mm DIA. EXTRUDED HOLES (LIQUID LINES)
2" 50.8mm DIA. EXTRUDED HOLES (SUCTION LINES)
8 1/4" 209.6mm
6 1/4" 158.8mm
30 5/8" 778mm
31 1/4" 794mm
1 1/2" 38.1mm
DETAIL "A"
2"/50.8mm DIA. KNOCKOUTS (FOR 575V HEAD PRESSURE CONTROL WIRING)
26 7/8" 683mm
12 7/8" 327mm
45 3/8" 1153mm
VIEW "B"

20 Tons

Figure 23. 20 Tons TWA240B Heat Pump. All dimensions are in inches.

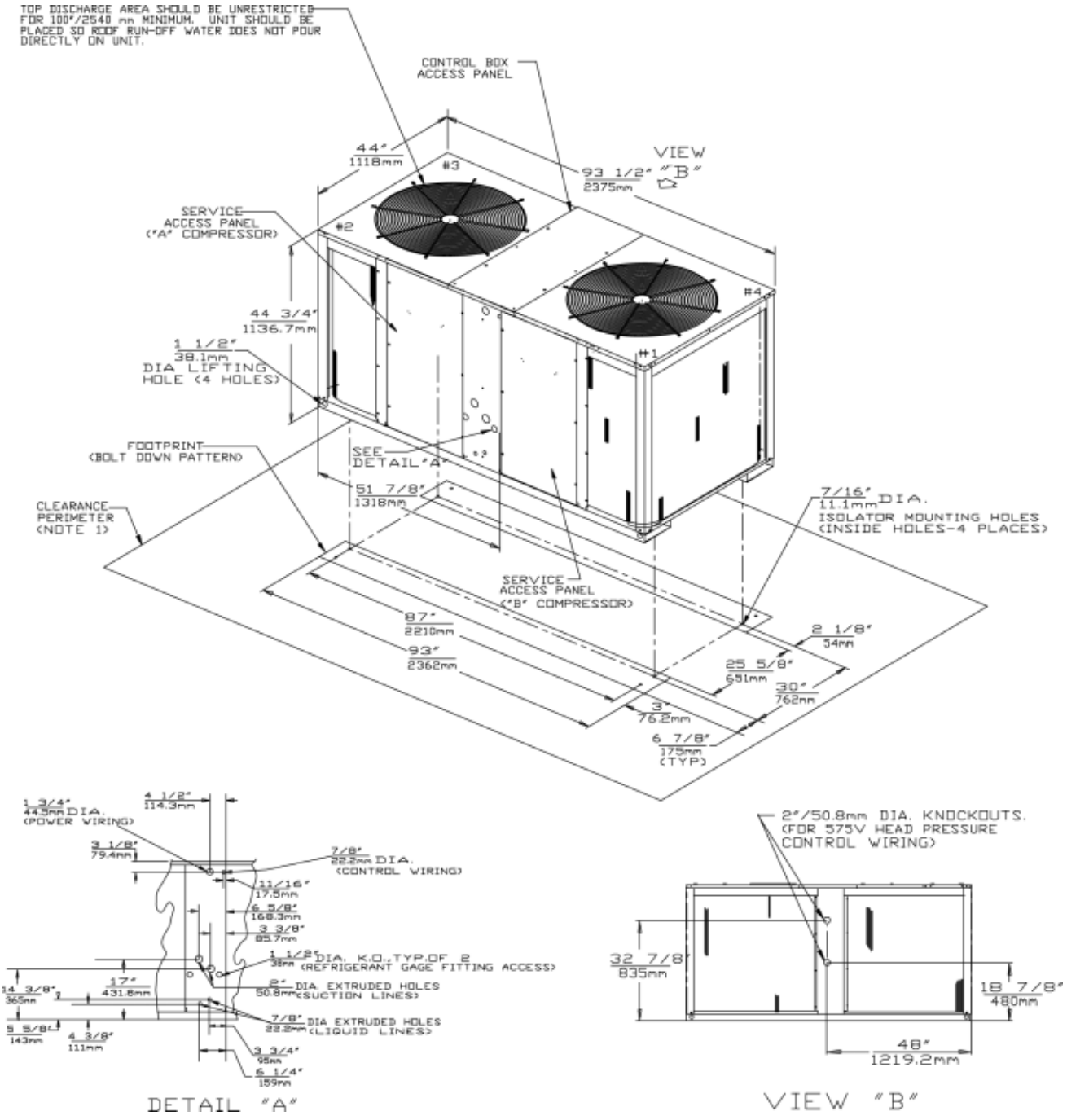
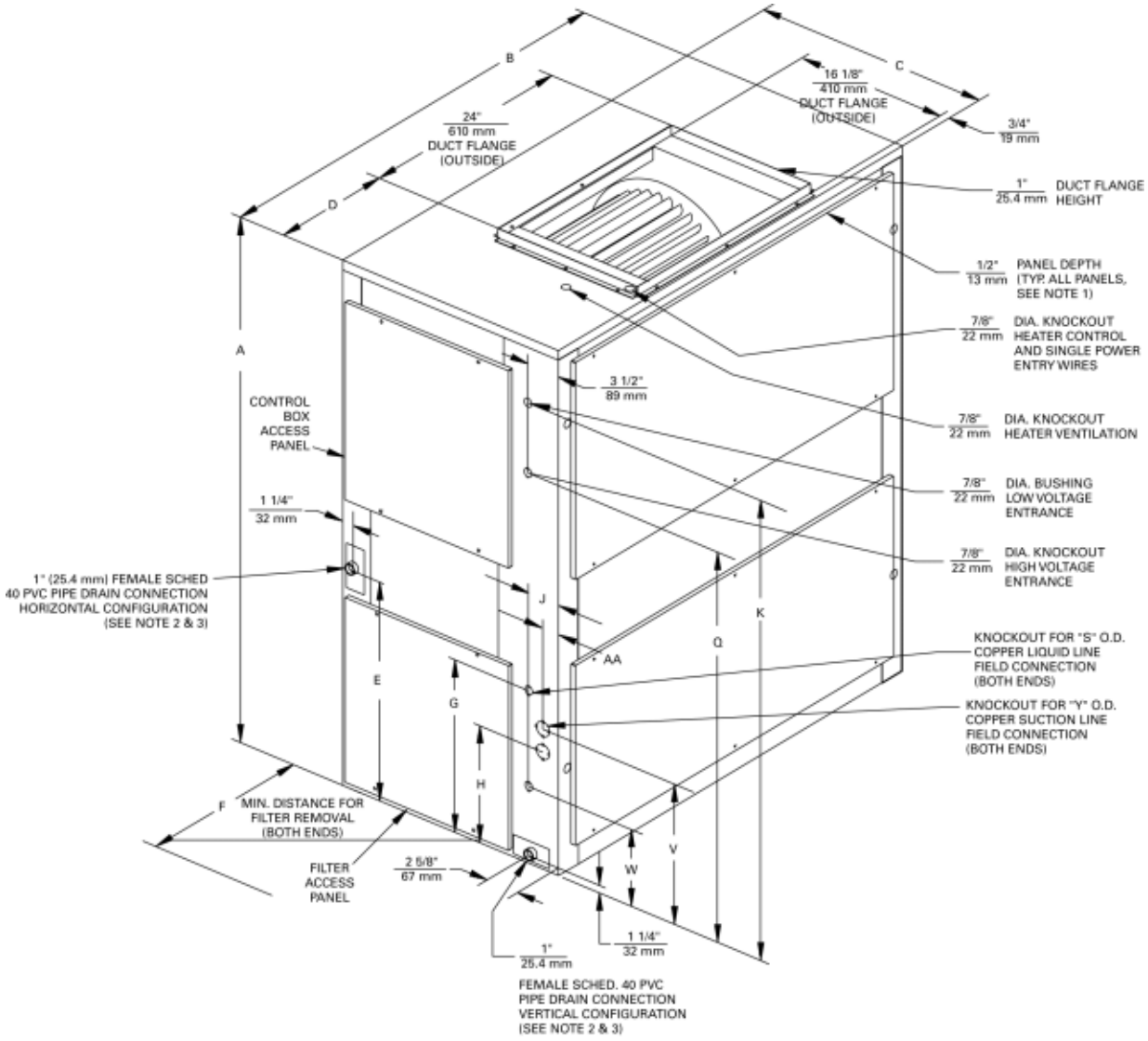

TOP DISCHARGE AREA SHOULD BE UNRESTRICTED FOR 100"/2540 mm MINIMUM. UNIT SHOULD BE PLACED SO ROOF RUN-OFF WATER DOES NOT POUR DIRECTLY ON UNIT.
CONTROL BOX ACCESS PANEL
44" 1118mm
93 1/2" 2375mm
VIEW "B"
#3
#2
#4
#1
SERVICE ACCESS PANEL ("A" COMPRESSOR)
44 3/4" 1136.7mm
1 1/2" 38.1mm DIA LIFTING HOLE (4 HOLES)
FOOTPRINT (BOLT DOWN PATTERN)
SEE DETAIL "A"
51 7/8" 1318mm
CLEARANCE PERIMETER (NOTE 1)
7/16" 11.1mm DIA. ISOLATOR MOUNTING HOLES (INSIDE HOLES-4 PLACES)
SERVICE ACCESS PANEL ("B" COMPRESSOR)
87" 2210mm
93" 2362mm
2 1/8" 54mm
25 5/8" 651mm
30" 762mm
3" 76.2mm
6 7/8" 175mm (TYP.)
1 3/4" 44.5mm DIA. (POWER WIRING)
4 1/2" 114.3mm
3 1/8" 79.4mm
7/8" 22.2mm DIA. (CONTROL WIRING)
11/16" 17.5mm
6 5/8" 168.3mm
3 3/8" 85.7mm
1 1/2" 38mm DIA. K.O. TYP. OF 2 (REFRIGERANT GAGE FITTING ACCESS)
17" 431.8mm
14 3/8" 365mm
2" 50.8mm DIA EXTRUDED HOLES (SUCTION LINES)
7/8" 22.2mm DIA EXTRUDED HOLES (LIQUID LINES)
5 5/8" 143mm
4 3/8" 111mm
3 3/4" 95mm
6 1/4" 159mm
DETAIL "A"
2"/50.8mm DIA. KNOCKOUTS. (FOR 575V HEAD PRESSURE CONTROL WIRING)
32 7/8" 835mm
18 7/8" 480mm
48" 1219.2mm
VIEW "B"

Figure 24. 5 Tons TWE060A, 060B Air Handlers. All dimensions are in inches.


B
C
16 1/8" 410 mm DUCT FLANGE (OUTSIDE)
24" 610 mm DUCT FLANGE (OUTSIDE)
3/4" 19 mm
1" 25.4 mm DUCT FLANGE HEIGHT
D
1/2" 13 mm PANEL DEPTH (TYP. ALL PANELS, SEE NOTE 1)
7/8" 22 mm DIA. KNOCKOUT HEATER CONTROL AND SINGLE POWER ENTRY WIRES
A
3 1/2" 89 mm
CONTROL BOX ACCESS PANEL
7/8" 22 mm DIA. KNOCKOUT HEATER VENTILATION
7/8" 22 mm DIA. BUSHING LOW VOLTAGE ENTRANCE
1 1/4" 32 mm
7/8" 22 mm DIA. KNOCKOUT HIGH VOLTAGE ENTRANCE
1" (25.4 mm) FEMALE SCHED 40 PVC PIPE DRAIN CONNECTION HORIZONTAL CONFIGURATION (SEE NOTE 2 & 3)
J
K
Q
AA
KNOCKOUT FOR "S" O.D. COPPER LIQUID LINE FIELD CONNECTION (BOTH ENDS)
E
G
KNOCKOUT FOR "Y" O.D. COPPER SUCTION LINE FIELD CONNECTION (BOTH ENDS)
H
F
MIN. DISTANCE FOR FILTER REMOVAL (BOTH ENDS)
V
W
FILTER ACCESS PANEL
2 5/8" 67 mm
1" 25.4 mm
1 1/4" 32 mm
FEMALE SCHED. 40 PVC PIPE DRAIN CONNECTION VERTICAL CONFIGURATION (SEE NOTE 2 & 3)

NOTE:

1. LENGTH, WIDTH, AND HEIGHT DIMENSIONS DO NOT INCLUDE 1/2" ACCESS PANEL DEPTH.

2. REMOVABLE DRAIN PAN AND ATTACHED DRAIN CONNECTION MAY BE INSTALLED ON EITHER END OF UNIT IN EITHER THE VERTICAL OR HORIZONTAL CONFIGURATION. PLASTIC DRAIN PAN ACCESS PLATE ON THE END OF UNIT OPPOSITE DRAIN CONNECTION MUST BE REMOVED TO SLIDE DRAIN PAN OUT OF UNIT FOR CLEANING. ACCESS PLATE MUST BE RE-INSTALLED AFTER SLIDING DRAIN PAN BACK INTO UNIT.

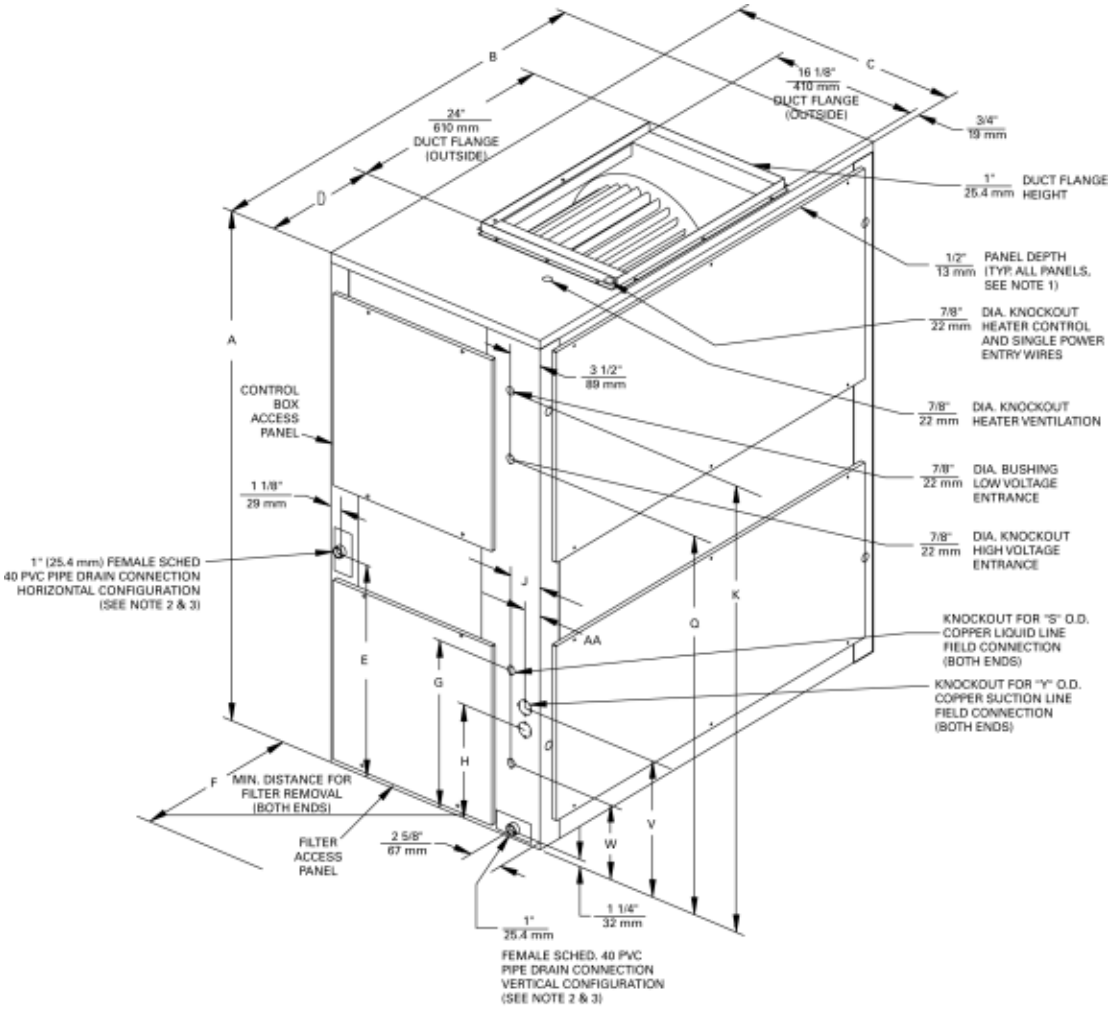
3. IF PERIODIC DRAIN PAN CLEANING IS REQUIRED, ALLOW ROOM FOR PARTIAL REMOVAL OF PAN OR DRAIN CONNECTION END OF UNIT.

Table 39. Air Handler Dimensions (in.)

Tons	Model No.	A	B	C	D	E	F	G	H	J	K	Q
5	TWE060A	48	38	22	8	19-1/2	26	15-7/8	14-1/8	1-7/8	42-1/8	34-5/8
5	TWE060B	48	38	22	8	19-1/2	26	16-1/4	13-1/4	1-1/8	42-1/8	34-5/8

Tons	Model No.	S	V	W	Y	AA
5	TWE060A	3/8	—	—	1-1/8	1-7/8
5	TWE060B	5/16	14-3/4	11-1/8	3/4	2

Figure 25. 7½ & 10 Tons TWE090A, 120A; TWE090B, 120B Air Handlers. All dimensions are in inches.


B
C
D
A
24" 610 mm DUCT FLANGE (OUTSIDE)
16 1/8" 410 mm DUCT FLANGE (OUTSIDE)
3/4" 19 mm
1" 25.4 mm DUCT FLANGE HEIGHT
1/2" 13 mm PANEL DEPTH (TYP. ALL PANELS, SEE NOTE 1)
7/8" 22 mm DIA. KNOCKOUT HEATER CONTROL AND SINGLE POWER ENTRY WIRES
3 1/2" 89 mm
7/8" 22 mm DIA. KNOCKOUT HEATER VENTILATION
CONTROL BOX ACCESS PANEL
7/8" 22 mm DIA. BUSHING LOW VOLTAGE ENTRANCE
1 1/8" 29 mm
7/8" 22 mm DIA. KNOCKOUT HIGH VOLTAGE ENTRANCE
1" (25.4 mm) FEMALE SCHED 40 PVC PIPE DRAIN CONNECTION HORIZONTAL CONFIGURATION (SEE NOTE 2 & 3)
J
K
Q
AA
E
G
KNOCKOUT FOR "S" O.D. COPPER LIQUID LINE FIELD CONNECTION (BOTH ENDS)
KNOCKOUT FOR "Y" O.D. COPPER SUCTION LINE FIELD CONNECTION (BOTH ENDS)
H
F
MIN. DISTANCE FOR FILTER REMOVAL (BOTH ENDS)
V
W
FILTER ACCESS PANEL
2 5/8" 67 mm
1" 25.4 mm
1 1/4" 32 mm
FEMALE SCHED. 40 PVC PIPE DRAIN CONNECTION VERTICAL CONFIGURATION (SEE NOTE 2 & 3)

NOTE:

1. LENGTH, WIDTH, AND HEIGHT DIMENSIONS DO NOT INCLUDE 1/2" ACCESS PANEL DEPTH.

2. REMOVABLE DRAIN PAN AND ATTACHED DRAIN CONNECTION MAY BE INSTALLED ON EITHER END OF UNIT IN EITHERTHE VERTICAL OR HORIZONTAL CONFIGURATION. PLASTIC DRAIN PAN ACCESS PLATE ONTHE END OF UNIT OPPOSITE DRAIN CONNECTION MUST BE REMOVEDTO SLIDE DRAIN PAN OUT OF UNIT FOR CLEANING. ACCESS PLATE MUST BE RE-INSTALLED AFTER SLIDING DRAIN PAN BACK INTO UNIT.

3. IF PERIODIC DRAIN PAN CLEANING IS REQUIRED, ALLOW ROOM FOR PARTIAL REMOVAL OF PAN OR DRAIN CONNECTION END OF UNIT.

Table 40. Air Handler Dimensions (in.)

Tons	Model No.	A	B	C	D	E	F	G	H	J	K
7½	TWE090A	54	47-1/2	25	11-3/4	22-3/8	22	—	17-3/4	4	45-1/4
7½	TWE090B	54	47-1/2	25	11-3/4	22-3/8	22	20-1/8	16	2-1/8	45-1/4
10	TWE120A	54	63-12	25	19-3/4	22-3/8	22	—	17-3/4	4	45-1/4
10	TWE120B	54	63-1/2	25	19-3/4	22-3/8	22	20-1/8	16	2-1/8	45-1/4

Tons	Model No.	Q	S	V	W	Y	AA
7½	TWE090A	38-1/8	1/2	—	15	1-3/8	2
7½	TWE090B	38-1/8	3/8	18-3/4	14	1-1/8	2-1/8
10	TWE120A	38-1/8	1/2	—	15	1-3/8	2
10	TWE120B	38-1/8	3/8	18-3/4	14	1-1/8	2-1/8

Figure 26. 5-10 Tons TWE060A, 090A, 120A; TWE060B, 090B, 120B Air Handlers

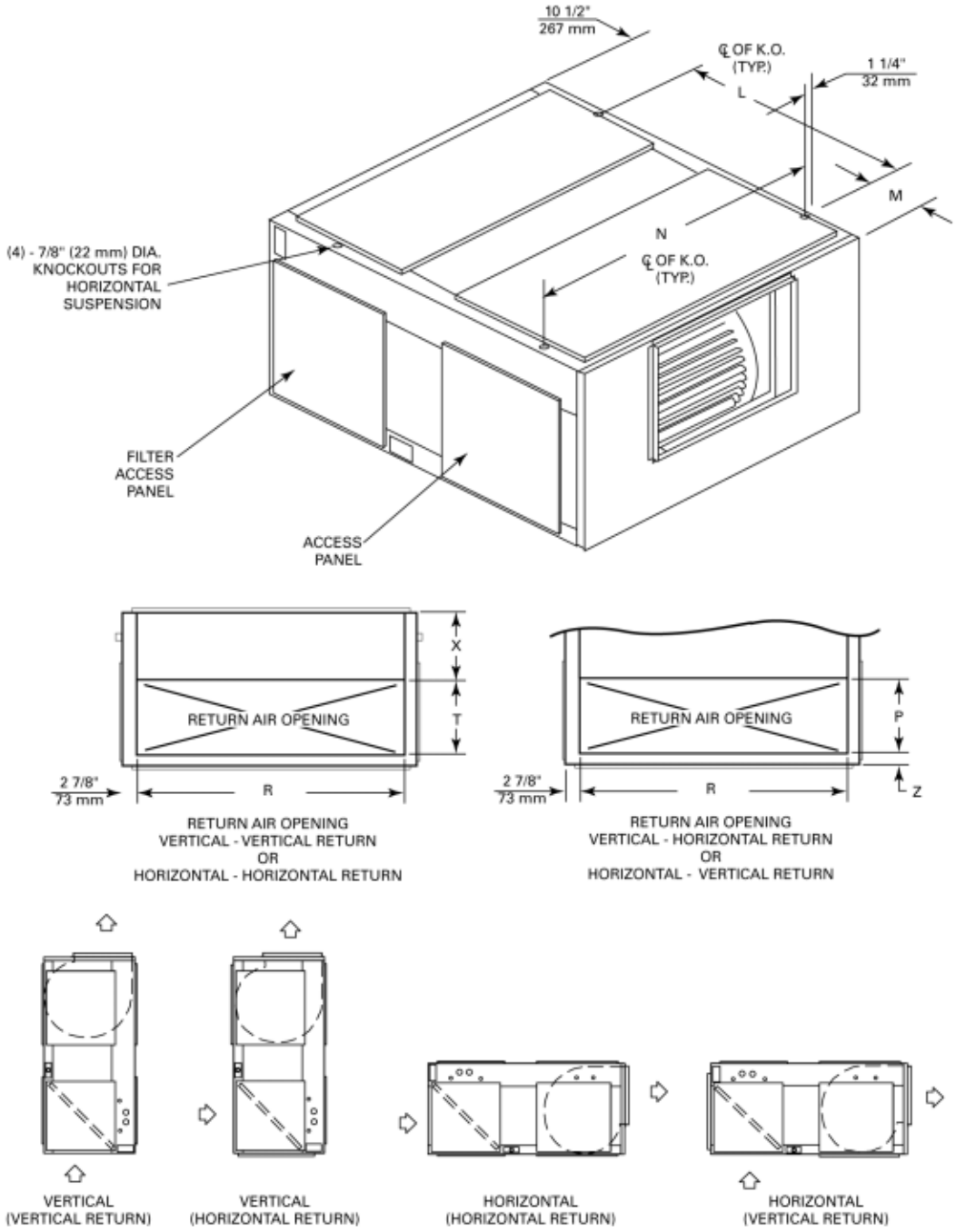
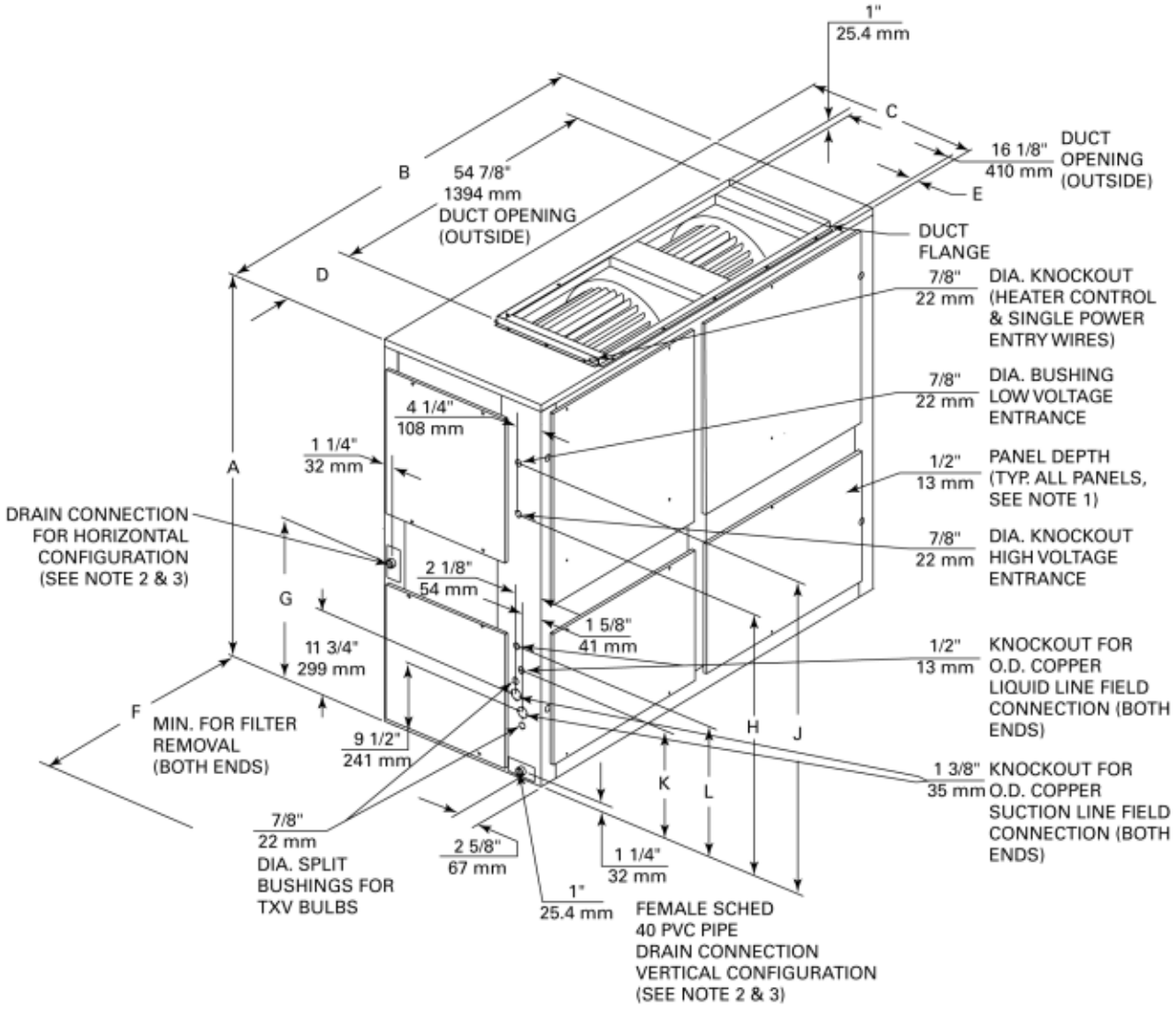


Table 41. Air Handler Dimensions (in.)

Tons	Model No.	L	M	N	P	R	T	X	Z
5	TWE060A,060B	34-5/8	2 7/8	35-5/8	12 1/4	32-1/4	12 1/2	7 5/8	2
7½	TWE090A, 090B	36-7/8	6 5/8	45-1/8	16-1/8	41-3/4	16-1/4	6 7/8	1 3/4
10	TWE120A, 120B	36-7/8	6 5/8	61-1/8	16-1/8	57-3/4	16-1/4	6 7/8	1 3/4

Figure 27. 15 Tons TWE180 Air Handlers. All dimensions are in inches.



NOTE:

1. LENGTH, WIDTH, AND HEIGHT DIMENSIONS DO NOT INCLUDE 1/2" ACCESS PANEL DEPTH.

2. REMOVABLE DRAIN PAN AND ATTACHED DRAIN CONNECTION MAY BE INSTALLED ON EITHER END OF UNIT IN EITHER THE VERTICAL OR HORIZONTAL CONFIGURATION. PLASTIC DRAIN PAN ACCESS PLATE ON THE END OF UNIT OPPOSITE DRAIN CONNECTION MUST BE REMOVED TO SLIDE DRAIN PAN OUT OF UNIT FOR CLEANING. ACCESS PLATE MUST BE RE-INSTALLED AFTER SLIDING DRAIN PAN BACK INTO UNIT.

3. IF PERIODIC DRAIN PAN CLEANING IS REQUIRED, ALLOW ROOM FOR PARTIAL REMOVAL OF PAN OR DRAIN CONNECTION END OF UNIT.

Figure 28. 15 Tons TWE180 Air Handlers

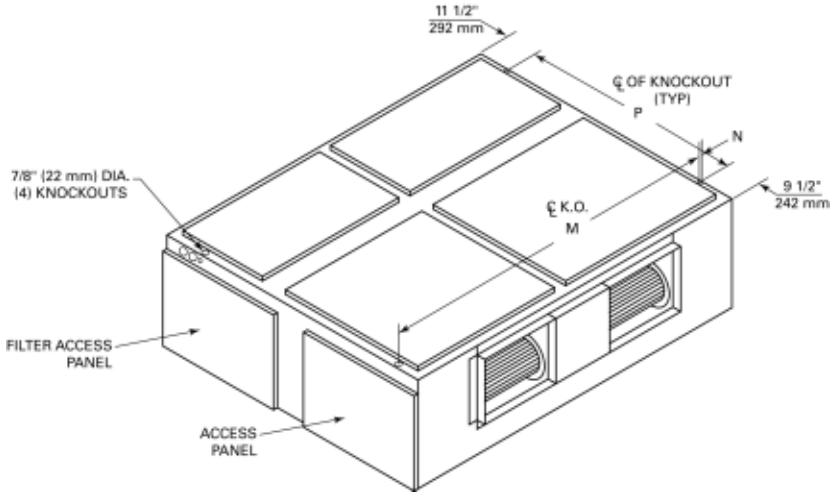


Figure 29. 15 Tons TWE180 Air Handlers

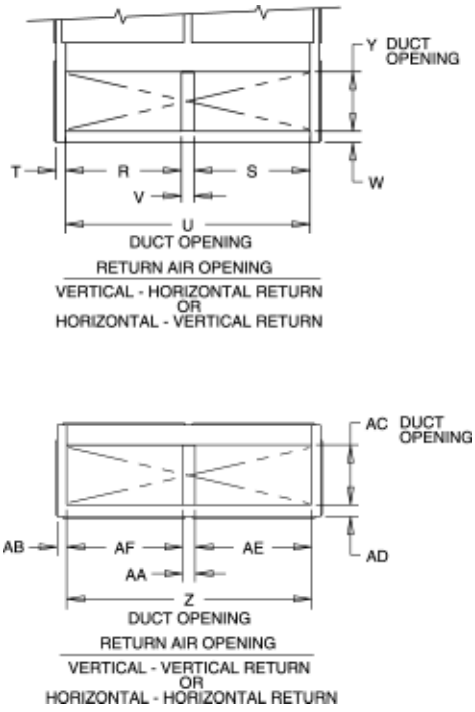
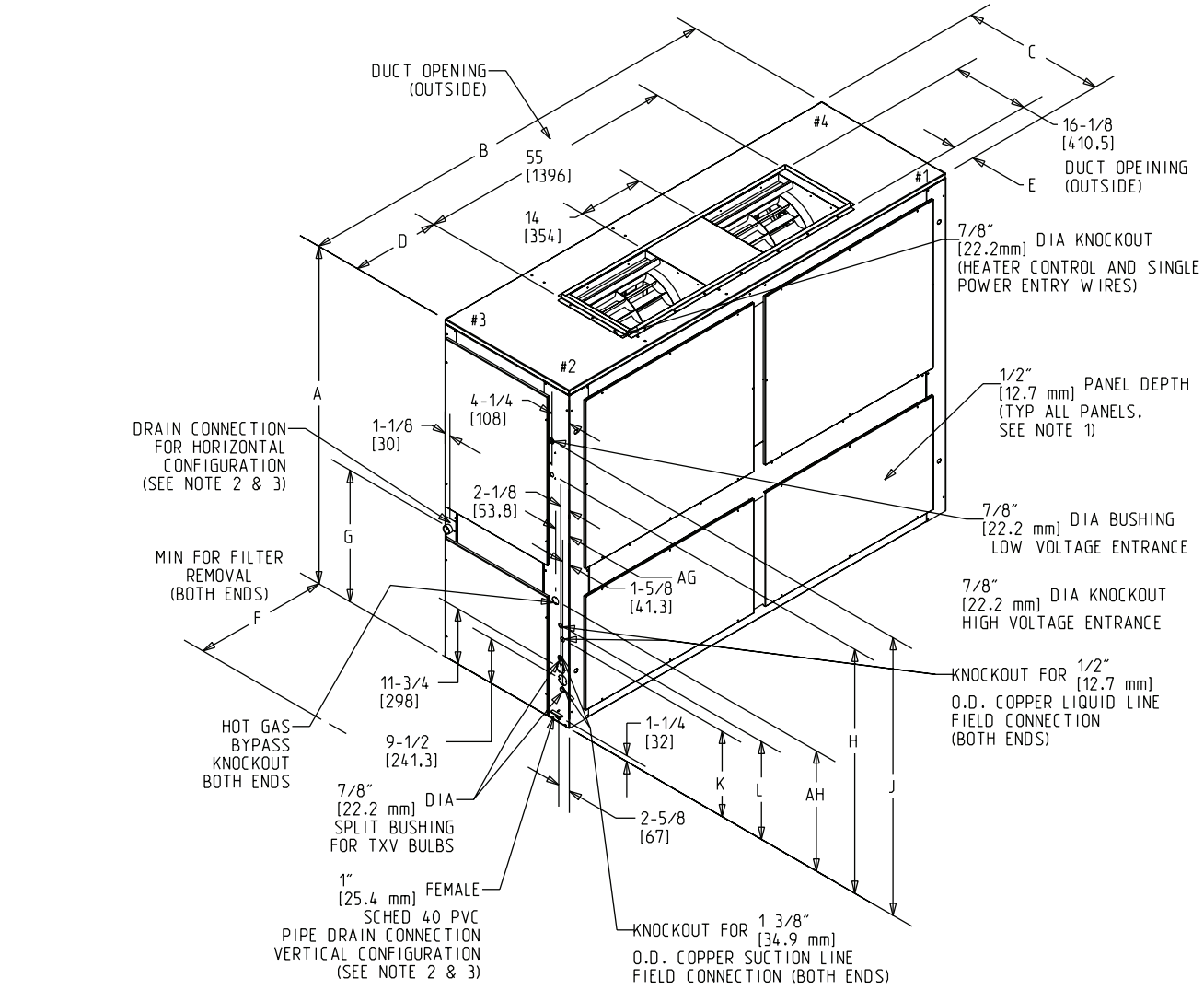


Table 42. Air Handler Dimensions (in.)

Tons	Model No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P
15	TWE180B	69	79-1/2	27-5/8	12-3/8	1-5/8	26	25-1/8	49-1/8	56-1/4	15-1/2	19-1/2	77-1/4	1 1/4	48
Tons	**Model No.**	**R**	**S**	**T**	**U**	**V**	**W**	**Y**	**Z**	**AA**	**AB**	**AC**	**AD**	**AE**	**AF**
15	TWE180B	35	35	2-7/8	73-7/8	3-3/4	3-3/8	18	73-7/8	3-3/4	2-7/8	18	3-5/8	35	35

20 Tons

Figure 30. 20 Tons TWE240B Air Handlers


DUCT OPENING (OUTSIDE)
B
55 [1396]
D
14 [354]
#4
#1
#3
#2
C
16-1/8 [410.5]
DUCT OPEINING (OUTSIDE)
E
7/8" [22.2mm] DIA KNOCKOUT (HEATER CONTROL AND SINGLE POWER ENTRY WIRES)
A
4-1/4 [108]
1-1/8 [30]
DRAIN CONNECTION FOR HORIZONTAL CONFIGURATION (SEE NOTE 2 & 3)
1/2" [12.7 mm] PANEL DEPTH (TYP ALL PANELS, SEE NOTE 1)
2-1/8 [53.8]
7/8" [22.2 mm] DIA BUSHING LOW VOLTAGE ENTRANCE
G
MIN FOR FILTER REMOVAL (BOTH ENDS)
F
1-5/8 [41.3] AG
7/8" [22.2 mm] DIA KNOCKOUT HIGH VOLTAGE ENTRANCE
KNOCKOUT FOR 1/2" [12.7 mm] O.D. COPPER LIQUID LINE FIELD CONNECTION (BOTH ENDS)
11-3/4 [298]
HOT GAS BYPASS KNOCKOUT BOTH ENDS
9-1/2 [241.3]
1-1/4 [32]
H
K
L
AH
J
7/8" [22.2 mm] DIA SPLIT BUSHING FOR TXV BULBS
2-5/8 [67]
1" [25.4 mm] FEMALE SCHED 40 PVC PIPE DRAIN CONNECTION VERTICAL CONFIGURATION (SEE NOTE 2 & 3)
KNOCKOUT FOR 1 3/8" [34.9 mm] O.D. COPPER SUCTION LINE FIELD CONNECTION (BOTH ENDS)

NOTES:

1. LENGTH, WIDTH, AND HEIGHT DIMENSIONS DO NOT INCLUDE 1/2" ACCESS PANEL DEPTH.
2. REMOVABLE DRAIN PAN AND ATTACHED DRAIN CONNECTION MAY BE INSTALLED ON EITHER END OF UNIT IN EITHER THE VERTICAL OR HORIZONTAL CONFIGURATION. PLASTIC DRAIN PAN ACCESS PLATE ON THE END OF UNIT OPPOSITE DRAIN CONNECTION MUST BE REMOVED TO SLIDE DRAIN PAN OUT OF UNIT FOR CLEANING. ACCESS PLATE MUST BE RE-INSTALLED AFTER SLIDING DRAIN PAN BACK INTO UNIT.
3. IF PERIODIC DRAIN PAN CLEANING IS REQUIRED, ALLOW ROOM FOR PARTIAL REMOVAL OF PAN ON DRAIN CONNECTION END OF UNIT.

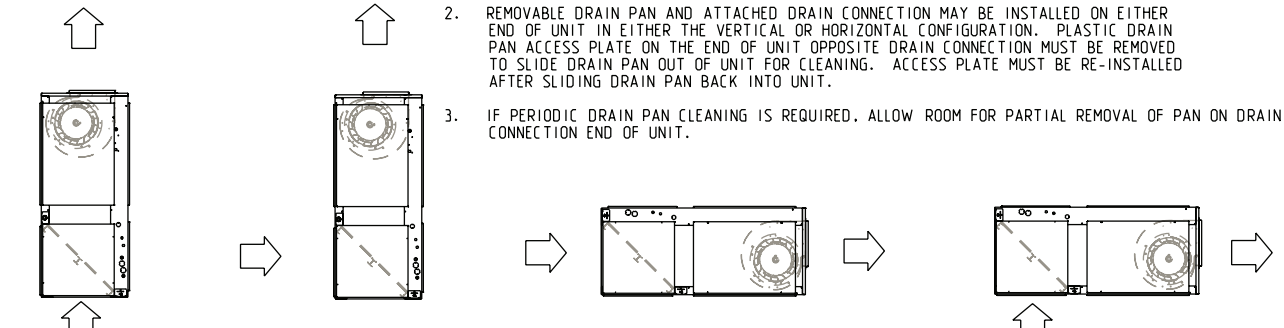


Figure 31. 20 Ton TWE240B Air Handlers

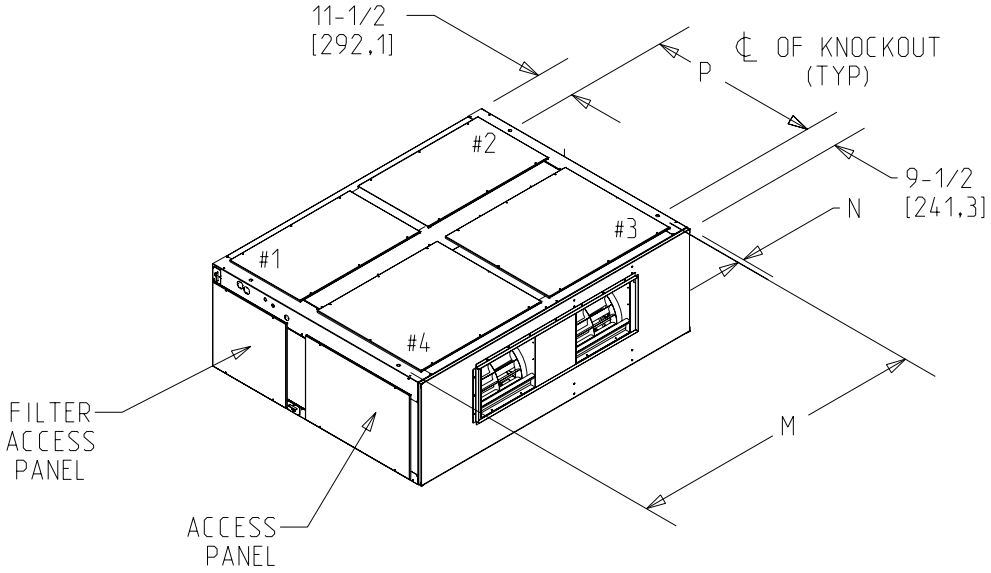


Figure 32. 15 Tons TWE180 Air Handlers

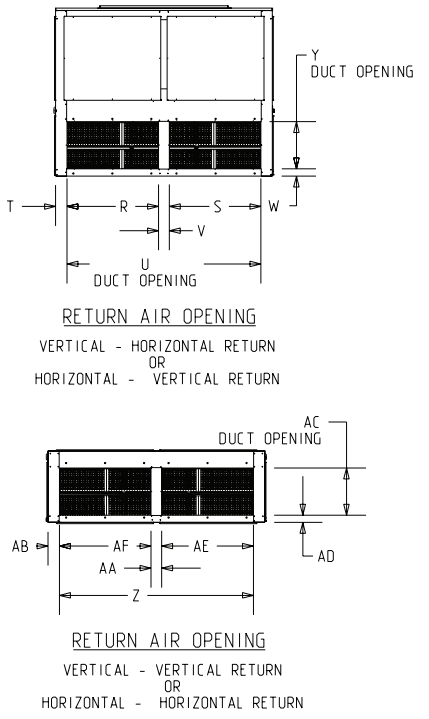


Table 43. Air Handler Dimensions (in.)

Tons	Model No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P
20	TWE240B	71-7/8	92-1/2	30-1/2	18-7/8	4-1/2	31	28	51-7/8	59-1/8	18-1/8	20-7/8	89-1/4	1 3/4	50-7/8
Tons	**Model No.**	R	S	T	U	V	W	Y	Z	AA	AB	AC	AD	AE	AF
20	TWE240B	39-1/8	39-1/8	4-7/8	82-7/8	4-5/8	3-1/8	20-1/8	82-7/8	4-5/8	4-7/8	20-1/8	3	39-1/8	39-1/8

Figure 33. Electric Heater for 5, 7½ and 10 Ton Air Handlers. All dimensions are in inches.

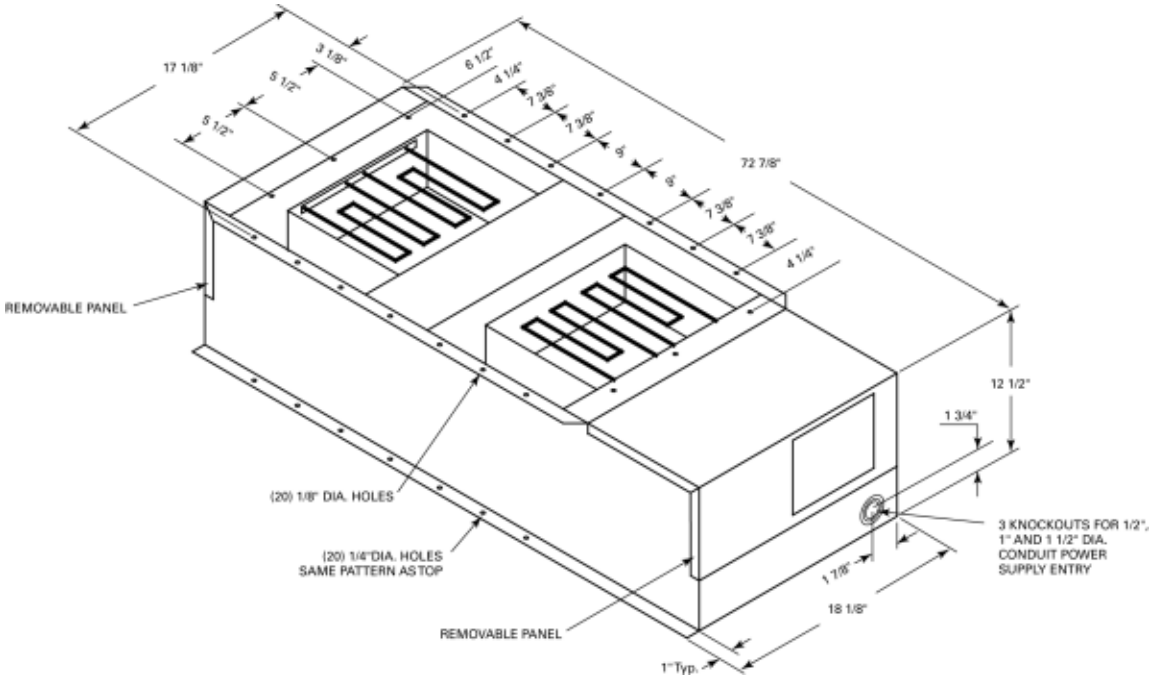


Figure 34. Electric Heater for 15 and 20 Ton Air Handlers. All dimensions are in inches.

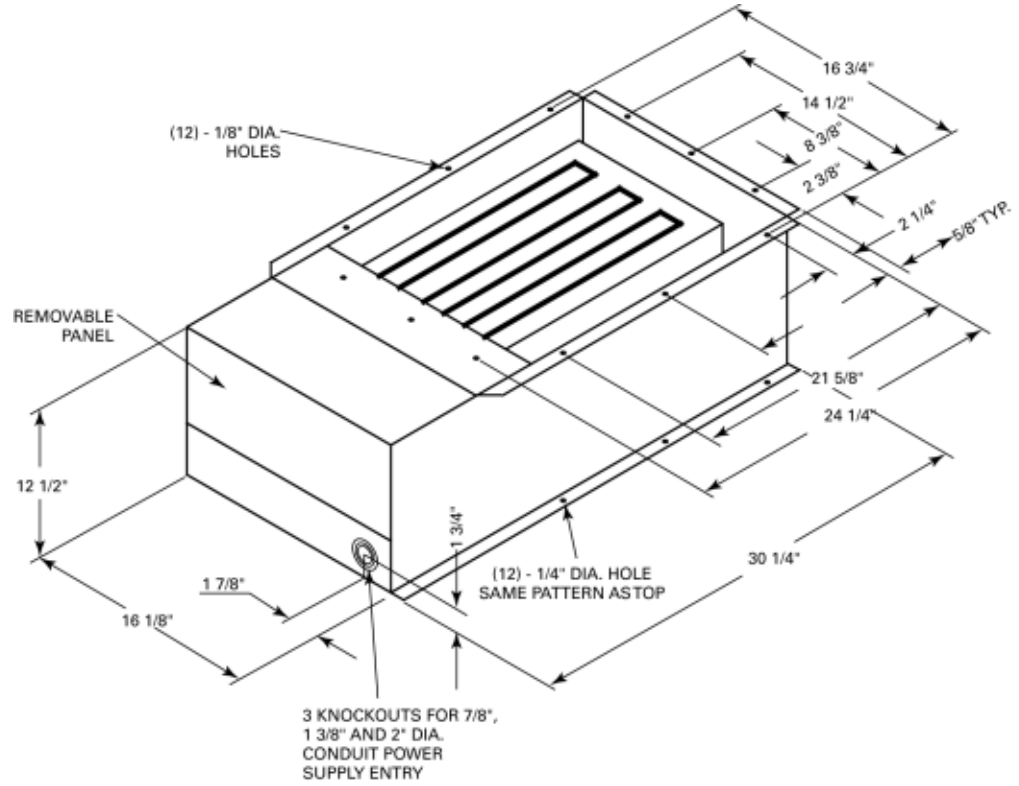


Table 44. Discharge Plenum and Grille

Tons	Model No.	A	B	C
5	BAYPLNM015	37-15/16	21-15/16	28
7½	BAYPLNM016	47-1/2	25	28
10	BAYPLNM017	63-1/2	25	28

Table 45. Discharge Plenum and Grille Dimensions (in.). For use with Electric Heat

Tons	Model No.	A	B	C
5	BAYPLNM025	37-15/16	21-15/16	29
7½	BAYPLNM026	47-1/2	25	29
10	BAYPLNM027	63-1/2	25	29
15	BAYPLNM028	79-1/2	27-11/16	35
20	BAYPLNM029	92-1/2	30-7/16	35

Figure 35. Discharge Plenum and Grille (with Electric Heat)

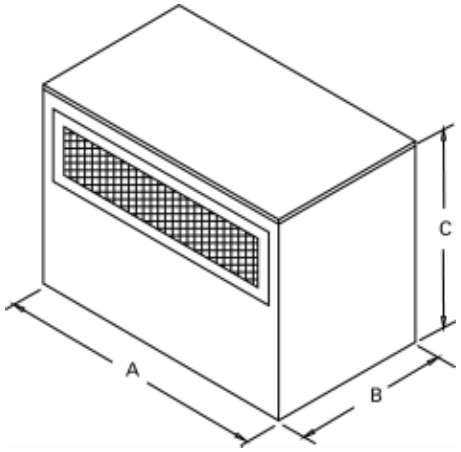
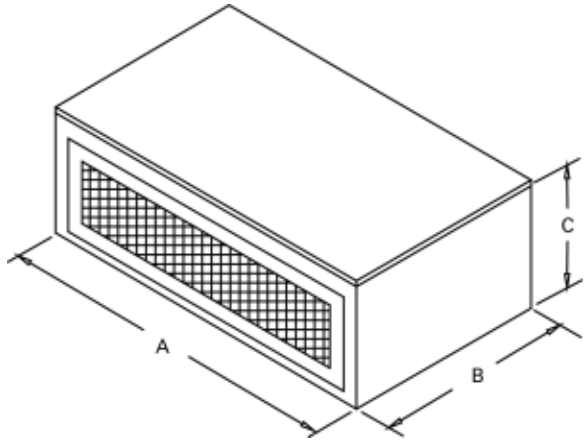


Table 46. Discharge Plenum and Grille Dimensions (in.) - No Heat

Tons	Model No.	A	B	C
15	BAYPLNM018	79-1/2	27-11/16	22
20	BAYPLNM019	92-1/2	30-7/16	24

Figure 36. Discharge Plenum and Grille (without Electric Heat)



Accessories, Subbase

Table 47. Subbase Dimensions (in.)

Tons	Model No.	A	B
5	BAYBASE001	38	22
7½	BAYBASE002	47-1/2	25
10	BAYBASE003	63-1/2	25
15	BAYBASE004	79-1/2	27-5/8
20	BAYBASE005	92-1/2	30-7/16

Figure 37. Subbase

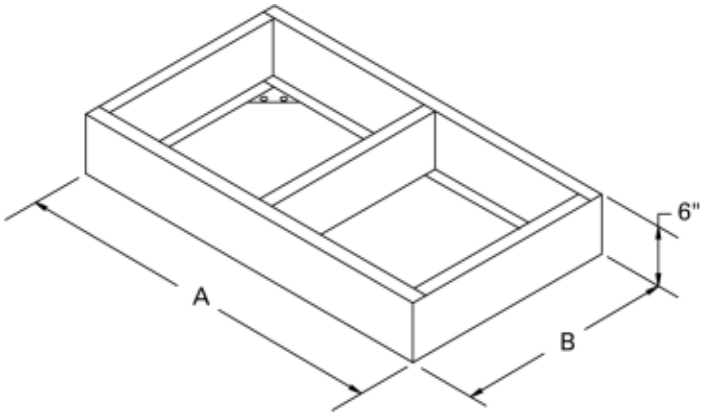
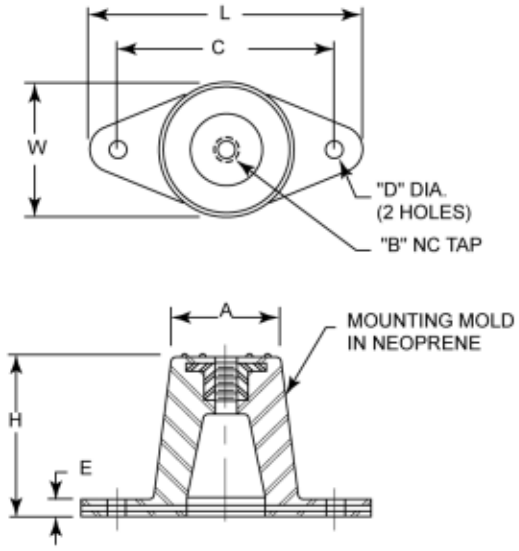
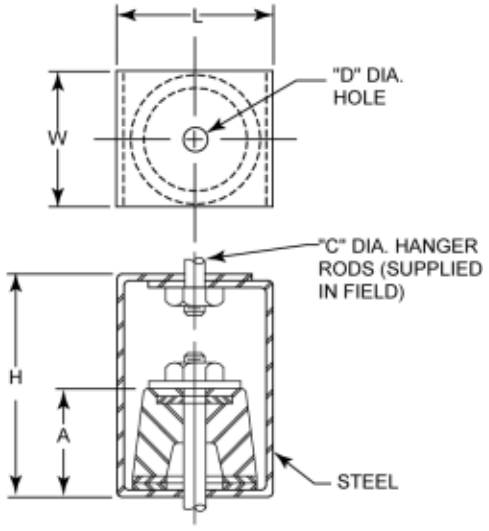


Figure 38. 5-20 Tons Rubber Isolators



BAYISLT003, 004, 005, 009, 010



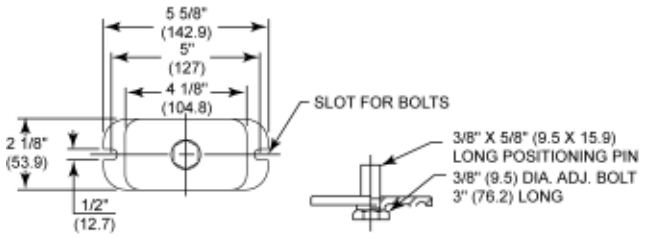
BAYISLT012, 013, 014, 015, 016

Table 48. Isolator Dimensions (in.)

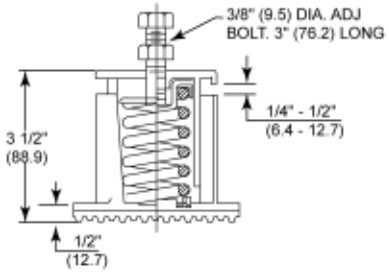
Model No.	L	W	H	A	B	C	D	E
BAYISLT003 BAYISLT004	3-1/8	1-3/4	1-1/4	1-1/4	3/8	2-3/8	3/8	1/4
BAYISLT005 BAYISLT009 BAYISLT010	3-7/8	2-3/8	1-3/4	1-3/4	3/8	3	3/8	1/4
BAYISLT013 BAYISLT014 BAYISLT015[(i)]	2-1/4	2	3	1-3/8	3/4	3/8	1/2	—
BAYISLT012 BAYISLT015[(i)] BAYISLT016	3	2-1/4	4-1/2	1-7/8	1/4	5/8	3/4	—

(i) BAYISLT015 contains quantity 2 of the 2 1/4 x 2 x 3 isolators and quantity 3 of the 3 x 2 1/4 x 4 1/2 isolators.

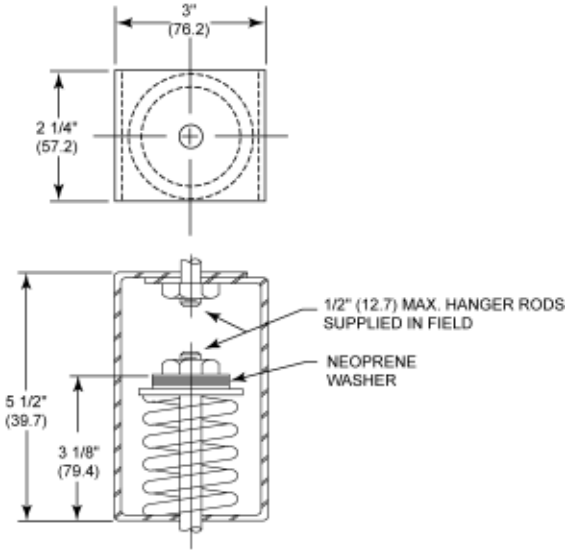
Figure 39. 5-20 Ton Spring Isolators



BAYISLT018, 019, 021



BAYISLT023, 024, 025



BAYISLT028, 029, 030 031

Weights

Table 49. Unit and Corner Weights (lbs.)

Tons	Unit Model No.	Shipping Maximum (lbs)	Net Maximum (lbs)	Corner Weights			
				1	2	3	4
7	TWA090A	390	343	112	89	63	79
10	TWA120A	502	443	149	116	78	100
15	TWA180B	816	740	195	186	175	184
20	TWA240B	970	885	253	250	190	192

Table 50. Accessory Weights (net lbs.)

Tons	Unit Model No.	RIS Isolators	Steel Spring Isolators	Anti Short Cycle Timer	Coil Guard	Thermostats	Low Ambient
7½	TWA090A	2	12	1	8	1	23
10	TWA120A	2	12	1	11	1	23
15	TWA180B	2	12	1	22	1	23
20	TWA240B	2	12	1	34	1	23

Figure 40. 7½ and 10 Ton TWA090A, 120A

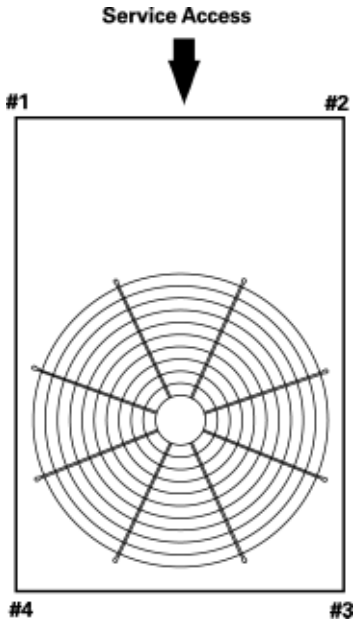


Figure 41. 15 and 20 Ton TWA180A, 240B

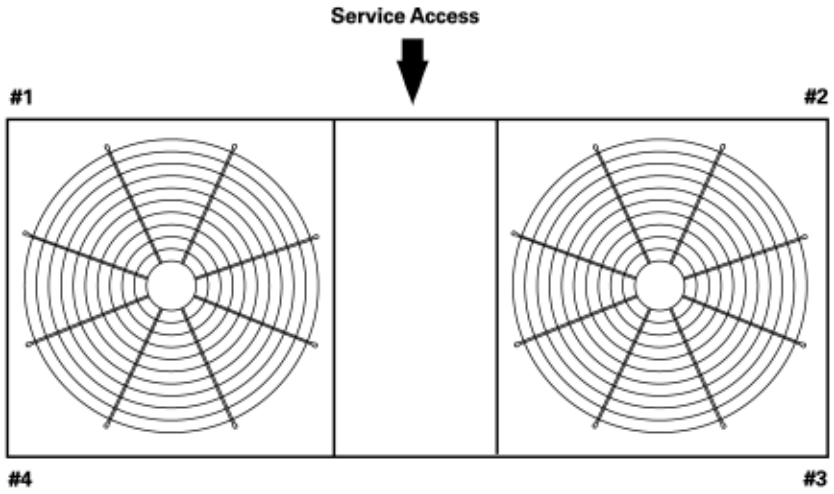


Table 51. Unit and Corner Weights (lbs.)

Tons	Unit Model No.	Shipping Maximum (lbs)	Net Maximum (lbs)	Corner Weights — Vertical				Corner Weights — Horizontal			
				1	2	3	4	A	B	C	D
5	TWE060A, B	298	232	59	59	59	59	54	64	64	54
7½	TWE090A, B	388	317	79	79	79	79	73	81	84	77
10	TWE120A, B	439	392	98	98	98	98	95	101	101	95
15	TWE180B	754	692	173	173	173	173	156	174	190	170
20	TWE240B	886	816	204	204	204	204	179	221	228	185

Notes:
1. If application requires steam or hot water heating coils, field supplied isolators must be utilized.

Table 52. Accessory Weights (net lbs.)

Tons	Unit Model No.	Discharge Plenum & Grille[(i)]	Discharge Plenum & Grille[(ii)]	Return Air Grille	Electric Heat Min / Max	Subbase	Oversized Motor	RIS Isolator Floor Mount	RIS Isolator Suspended Mount	Steel Spring Isolator Floor Mount	Steel Spring Isolator Suspended Mount	Control Transformer
5	TWE060A,B	58	93	3	32/43	14	31	2	9	12	6	—
7½	TWE090A,B	73	123	5	27/45	19	48	2	6	12	6	4
10	TWE120A,B	92	156	7	27/45	23	50	2	7	12	6	4
15	TWE180B	124	230	10	79/100	27	80	2	7	12	6	—
20	TWE240B	145	264	12	79/100	31	88	2	9	12	6	—

(i) For use when no supplemental heat is supplied.
(ii) For use with electric heat.

Figure 42. Vertical - 5, 7½ & 10 Ton TWE060A, 060B, 090A, 120A, 120B (left), 15 & 20 Ton TWE0180B, 240B (right)

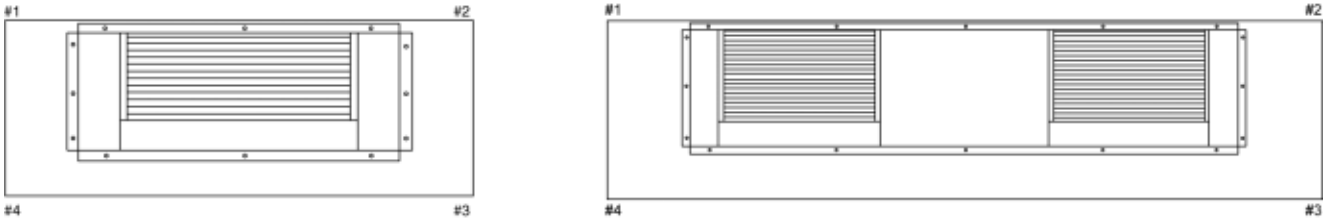
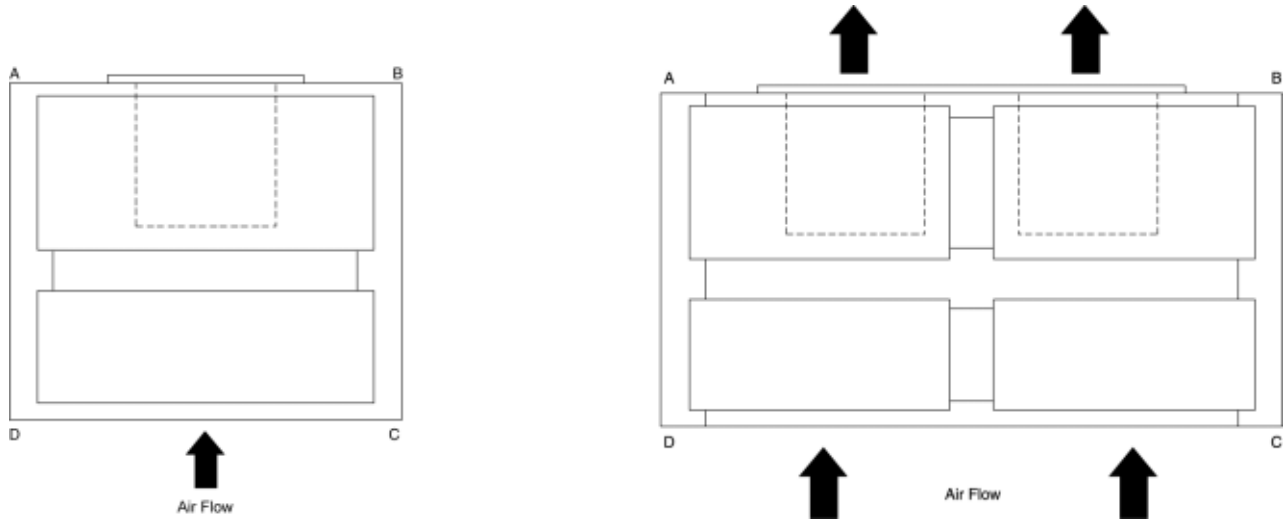


Figure 43. Horizontal - 5, 7½ & 10 Ton TWE060A, 060B, 090A, 120A, 120B (left), 15 & 20 Ton TWE0180B, 240B (right)



Mechanical Specifications

Heat Pumps

General

Units shall be assembled on heavy gauge steel mounting/lifting rails and shall be weather proofed. Unit shall include a hermetic scroll or reciprocating compressor(s), plate fin condenser coil, fans and motors, controls and holding charge of nitrogen. Operating Range shall be between 115°F to 50°F in cooling as standard from factory. Units shall be UL 1995 listed and rated in accordance with ARI Standard 340/360.

Casing

Unit casing shall be constructed of 18 gauge zinc coated heavy gauge, galvanized steel. Exterior surfaces shall be cleaned, phosphatized and finished with a weather-resistant baked enamel finish. Units surface shall be tested 500 hours in salt spray test. Units shall have removable end panels which allow access to all major components and controls.

Refrigeration System — Single Compressor

TWA090A, TWA120A units shall have a single refrigeration circuit. Each refrigeration circuit has an integral subcooling circuit. A refrigeration filter drier, expansion valve and check valves shall be provided as standard.

The TWA090A, TWA120A units shall have both a liquid line and suction gas line service valve with gauge port. TWA090A, TWA120A units shall have one direct drive Trane hermetic scroll compressor with centrifugal oil pump providing positive lubrication to moving parts.

Motor shall be suction gas-cooled and shall have a voltage utilization range of plus or minus 10 percent of nameplate voltage. Crankcase heater, internal temperature and current-sensitive motor overloads shall be included for maximum protection. Scroll type compressor shall provide inherently low vibration and noise by having no suction and discharge valves. External high and low pressure cutout devices shall be provided. Evaporator defrost control provided in indoor blower coil unit shall prevent compressor slugging by temporarily interrupting compressor operation when low evaporator coil temperatures are encountered.

Refrigeration System — Dual Compressor

TWA180B, TWA240B units shall have two separate and independent refrigeration circuits. Each refrigeration circuit shall have an integral subcooling circuit. A refrigeration filter drier shall be provided as standard.

Units shall have both a liquid line and suction gas line service valve with gauge ports. TWA180B, TWA240B units shall have two Trane direct drive hermetic scroll compressors with centrifugal oil pump and provide positive lubrication to all moving parts.

Motor shall be suction gas-cooled and shall have a voltage utilization range of plus or minus 10 percent of nameplate voltage. Crankcase heater, internal temperature and current-sensitive motor overloads shall be included for maximum protection. Scroll type compressor shall provide inherently low vibration and noise by having no suction and discharge valves.

External high and low pressure cutout devices shall be provided. Evaporator defrost control provided in indoor blower coil shall prevent compressor slugging by temporarily interrupting compressor operation when low evaporator coil temperatures are encountered.

Condenser Coil

Coils shall be internally finned or smooth bore 3/8" copper tubes mechanically bonded to configured aluminum plate fin as standard. Coil shall be factory pressure and leak tested to 420 psig air pressure. Metal grilles with PVC coating for coil protection is optional.

Condenser Fan and Motor(s)

Direct-drive, statically and dynamically balanced 26 or 28 inch propeller fan(s) with aluminum blades and electro-coated steel hubs shall be used in draw-through vertical discharge position. Either permanently lubricated totally enclosed or open construction type motors shall be provided and shall have built in current and thermal overload protection. Motor(s) shall have either ball or sleeve bearing type.

Controls

Heat pump units shall be completely factory wired with necessary controls and contactor pressure lugs or terminal block for power wiring. Control wiring shall be 24-volt control circuit which includes fusing and control transformer. Units shall provide external location for mounting a fused disconnect device. Time delay timers to prevent compressors in dual compressor units from simultaneous start-up and anti-recycle timers are available as optional accessories.

Defrost Controls

Electronic timed initiated, temperature terminated defrost system with choice of 50, 70, or 90 minute cycle. Timed override limits defrost cycle to 10 minutes.

Low Ambient Operation

Standard units shall start and operate to approximately 50°F when matched with Trane air handlers and coils. Optional head pressure control accessory permits operation to 0°F.

Accessories

Low Ambient Head Pressure Control — Shall modulate the RPM of unit outdoor fan motor in response to outdoor ambient temperatures and liquid line temperature. Accessory provides unit cooling operation to outdoor temperatures of 0°F.

Vibration Isolation Packages — Shall reduce transmission of noise

and vibration to building structures, equipment and adjacent spaces. Packages shall be available in either neoprene-in-shear or spring-flex types.

Time Delay Relay — Shall prevent compressors in dual compressor unit from coming on line simultaneously. Timer shall be 24-volt, 60 cycle, with four minute timing period.

Anti-Short-Cycle Timer — Shall prevent rapid on-off compressor cycling in light load conditions by not allowing compressor to operate for 5-7 minutes upon shutdown. Shall consist of a solid state timing device, 24-volt, 60 cycle with either 5 or 7 minute fixed-off timing period.

Condenser Coil Guard — Metal grille with PVC coating shall be provided to alleviate coil damage.

Black Epoxy Coated Condenser Coil — The black epoxy coils have a thermoset vinyl coating that is bonded to the aluminum fin stock prior to the fin-stamping process. The pre-coated coils are an economical option for protection in mildly corrosive environments.

Air Handlers

General

Air handler units shall be completely factory assembled including coil, condensate drain pan, fan motor(s), filters and controls in an insulated casing that can be applied in either vertical or horizontal configuration. Units shall be rated and tested in accordance with ARI standard 340/360. Units shall be UL listed and labeled in accordance with UL 1995 for indoor blower coil units.

Casing

Unit casing shall be constructed of zinc coated, heavy gauge, galvanized steel. Exterior surfaces shall be cleaned, phosphatized and finished with a weather-resistant baked enamel finish. Casing shall be completely insulated with cleanable, foil faced, fire-retardant, permanent, odorless glass fiber material. All insulation edges shall be either captured or sealed. Knockouts shall be provided for unit electrical power and refrigerant piping connections. Captive screws shall be standard on all access panels.

Refrigeration System

The TWE060A, TWE090A, TWE120A units shall have a single refrigeration circuit and the TWE060B, TWE090B, TWE120B, TWE180B, TWE240B units shall have dual refrigeration circuits. Each refrigeration circuit is controlled by a factory installed thermal expansion valve.

Evaporator Coil

Configured aluminum fin surface shall be mechanically bonded to 3/8" internally enhanced copper tubing and factory pressure and leak tested at 375 psig. Coil is arranged for draw-through airflow and shall provide a double sloped condensate drain pan constructed of PVC plastic. The drain pan shall be removable for cleaning. The condensate drain pan can be installed in any of four positions allowing for vertical or horizontal application and providing external connections on either side of the unit.

Evaporator Fan

Double inlet, double width, forward curved, centrifugal-type fan(s) with adjustable belt drive shall be standard. Thermal overload protection shall be standard on motor. Fan and motor bearings shall be permanently lubricated. Oversized motors shall be available as an option for high static application. All indoor fan motors meet the U.S. Energy Policy Act of 1992 (EPACT)

Controls

Magnetic evaporator fan contactor, low voltage terminal strip, check valve(s), and single point power entry shall be included. All necessary controls shall be factory-installed and wired. Evaporator defrost control shall be included to prevent compressor slugging by temporarily interrupting compressor operation when low evaporator coil temperatures are encountered.

Filters

One inch, throw-away filters shall be standard on TWE060A, TWE090A, TWE060B, TWE090B and TWE120B model air handlers. Filters shall be accessible from the side coil access panel. Filter rack can be field converted to two inch capability. Two inch, throw-away filters shall be standard on TWE180B and TWE240B models.

Accessories

Electric Heaters — UL and CSA approved electric heat modules shall be available for installation directly on fan discharge. Electric Heaters shall be available in a wide range of capacities with one or two stage control, single-point electric power connection and terminal strip connections. Electric heater elements shall be constructed of heavy-duty nickel chromium elements internally wye connected on 480/600 volt, three phase and delta connected on 208/240 volt, three phase. Each 208/240 volt heater shall have pilot duty with secondary backup fuse links for automatic reset of high limit controls. Each 480/600 volt heater shall have automatic line break high limit controls.

Discharge Plenums and Grilles — Accessory discharge plenums shall be available for vertical, free discharge applications. Plenums shall be constructed of heavy-gauge, zinc coated galvanized steel finished with baked enamel to match the air handler unit. Grilles shall be satin finished aluminum and have four-way adjustable louvers.

Return Air Grilles — Accessory return air grille shall be provided for vertical front, free return applications. Grilles shall be installed in place of the front lower side panel. Grille shall be satin finished aluminum with non-adjustable louvers.

Mounting Subbase — Available for vertical floor mount configurations. Subbase shall be constructed of heavy gauge, zinc coated galvanized steel with baked enamel finish to match air handler unit. Subbase is required in the vertical air flow application for condensate drain trapping and when isolators are required.

Vibration Isolators — Shall reduce transmission of noise and vibration to building structures, equipment and adjacent spaces. Packages shall

be available in either neoprene-in shear or spring-flex types in floor or suspended mountings.

Oversized Motors — Field installed oversized motors shall be available for high static pressure applications.

Control Options

Standard Indoor Thermostats — Two stage heating and cooling operation or one stage heating and cooling thermostats shall be available in either manual or automatic changeover.

Programmable Electronic Night Setback Thermostat — Shall provide heating setback and cooling setup with 7-day programming capability.

Outdoor Thermostat — Shall provide staging control of electric heaters based on a set outdoor temperature.

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